# The Builder.

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## *Bristol and Clifton. Elmdale House, on the Downs.*

THE growth of Bristol within the last eight or ten years is something to wonder at, and the change that is now being made in the city itself is equally marvellous. Hundreds of houses faced with stone, many of them costly, and of considerable size, have been built, and are being built, in Clifton; and we hear at the present moment, of a fresh undertaking, which includes the erection of 300 houses on property at Redland, extending far on the road to Horfield. The corporation are about to spend nearly 200,000*l.* in forming new roads; let us hope under good advice, and that the improvements are to be all carried on with relation to each other, and so as to produce the most satisfactory whole. They are also straightening their river, and making a new lock, at the cost of 150,000*l.*; the rock and earth removed being hoisted to the Downs, and used there to fill up some large quarries, whereby they hope to gain several acres of available recreation-ground.

Elmdale House, of which we give illustrations,* faces the Downs, and has been built by Mr. Alderman Proctor, for his residence, Messrs. George and Henry Godwin being the architects. For a house making no pretensions to be a mansion, it is noticeable for the size of the rooms, and the amount of accommodation afforded. The hall, of some size, is open from bottom to top, with galleries on the different floors leading to the rooms around it, and is lighted by a large flat skylight, containing coloured glass. The dining-room, with ante-room, has a length of 61 ft. by 18 ft., and the drawing-rooms are of the same dimensions, affording the opportunity for a fair walk in foul weather. The billiard-room, including the bow (as in the case of the other rooms), is 31 ft. by 23 ft. 6 in., and is connected with the dining-room by double folding doors. A tube all round the billiard-room, under the ceiling, one side of it being formed by a perforated enrichment in the cornice, and which communicates with the outer air by valves under control, assists the ventilation. A pipe from the outer air opens in the hearth of each fireplace with a grating that can be closed or opened at pleasure, the object of course being to supply the fire with air without creating draughts in the room. We are scarcely prepared, however, to recommend the indiscriminate introduction of this arrangement. It needs intelligent regulation. The dining-room, it will be seen on the plan, is "served" from the conservatory, where there is a lift from the kitchen department. The whole of the exposed woodwork throughout the house, except the staircase, which is of oak polished, is of picked pine varnished. This part of the work is very creditable to the joiners employed. There is no cast-work in the cornices, with the exception alluded to in the billiard-room, and the walls are hung with lining paper merely coloured in distemper and bordered. The height of the ground-story, we should mention, is 14 ft. On the first-floor the height is 13 ft. Here there are a library and various chambers, all of large size. To meet the views of the owner, who maintains that a screen in a large room answers all purposes, there are no dressing-rooms. There is a second-story of chambers, including the bath-room, with boiler; and a staircase leads up to a flat on the roof, whence is obtained a view rarely surpassed.

The house externally is of stone, dug on the spot, with Bath stone dressings. A previous quarry on the site, by the way, necessitated some rather heavy work in the foundations at one corner of the building.

The front we have illustrated next the Downs faces North-West. For comfort's sake (the circumstances of the ground permitting) the entrance porch is placed on the other face, south-east; and on this side are the lodge, the stables, and the glass-houses.

We can scarcely refuse to let the owner say a few words on two or three points. Mr. Proctor thus writes:—

"We find the situation of the house and arrangement of windows and hall very favourable for ventilation. During the cold weather we were enabled to keep the house comfortably warm, and still obtain all that agreeable freshness which nothing but plenty of air will give. In the summer we could so regulate the change of air, and light, as to have it agreeably cool. The supply of air to the fires answers well, except in windy weather, when we close the gratings on the windward side of the house. The ventilation in the billiard-room also answers well. The advantages of placing the house south-east and north-west as regards light, ventilation, and enjoyment of prospect from the windows, forces itself upon us daily, particularly as the rooms open by folding-doors and run through to these points.

Our prevailing wind and rain are from the south-west, and I attribute a great deal of the comfort we enjoy to our not having any opening on that side. I would venture to suggest that you recommend the building of houses with large rooms, if the occupants wish to be comfortable; and, if cost is an object, save money by omitting decoration: have large plain rooms rather than small rooms highly decorated. We find that, by placing large paintings upon the walls, a few *large* pieces of furniture in the rooms, with the advantage of the well-proportioned doors and windows you have given us, we obtain that homely comfortable feeling we all enjoy, but which we were afraid we should not find in rooms so large."

Mr. Proctor has covered the walls with a very considerable collection of agreeable modern paintings and drawings, including Etty's "Joan of Arc," and works by Müller, Woolmer, Hopkins, Bright, Hill, Syer, Wolf, Pyne, Hulme, S. Tovey, Meadows, Shayer, Anthony, E. Barnes, Cooke, Nieumann, Ward, "Jock" Wilson, Wells, Dawson, and others.

Close by the house the Guthrie memorial chapel, recently completed from the designs of Mr. Hansom, in connexion with Clifton College, forms a very agreeable feature. It is Decorated in style, and has a polygonal apse. The college altogether forms now an important pile. It seems regrettable that the style adopted in one of the masters' houses recently erected, a large rectangular building, with overhanging roof, should be such, whatever may be its merits, as should entirely separate it from the establishment to which it belongs. A handsome Congregational chapel, Mr. Hansom being the architect, has been erected near the college. A Baptist chapel in the White Ladies-road is another noticeable building in the neighbourhood.

Getting away down Park-street, soon it is to be hoped to be rendered a less steep descent, a hoarding will be seen in College-green, behind which Mr. Street is shortly to begin to complete the cathedral, for which some thousands of pounds will be required. Some difference of opinion exists on the subject, but the work will doubtless go on. College-green Hotel, lofty and large (five stories besides attics), is approaching completion. It was designed by Mr. Hawtin, is all of stone, Italian in style, and in parts a little weak in character. On the other side of College-green, adjoining the mayor's chapel, there is a shop-front at the establishment late Mr. Charles Taylor's, and now belonging to Messrs. Peters & Co., which deserves a word of praise. It includes piers of granite, with well-carved white marble capitals, and brown stone arches. The credit of the design belongs to Messrs. Foster & Wood, and Mr. Broad was the builder. Mr. Broad, an old resident of Bristol who worked under the writer many a year ago, is also the builder of a handsome pile of stone-fronted offices and shops in Nicholas-street; Mr. Ponton being the architect. This front includes tiers of semi-circular arches, and some very good carving in the shape of heads and ornamental dragons in spandrels. Close by, at the corner of High-street, Mr. Pointing, the chemist and something more, has rebuilt his house in North of Italy style, probably under the direction of the last-mentioned architect. Here, too, there is some very well executed carving, including a series of large heads in circular frames over the windows of the one-pair story, inscribed Apollo, Esculapius, Celsus, Minerva, and so on. The appearance of the front is very good, but it is none the better for a row of eight Mediæval lions along the top of it, holding shields, the effect of which from some points of view is *bizarre*. Minerva plays a prominent part in the pediment of a new building in Corn-street, now in progress, under Mr. Gingell, architect, for the Liverpool, London, and Globe Insurance Company. The group, of which Minerva forms the centre, is intended to symbolise the wisdom of insuring against fire and the damage of death; and, so far as can at present be seen over the scaffolding, seems very creditable, in point of execution, to Mr. Colley, the sculptor. The front, which is very elaborate, and promises to be an ornament to the too-narrow street, includes life-size figures of the Seasons, and much other carving. In this building we get back to classical forms and mouldings.

We must hasten on. At the fine church of St. Mary Redcliff, Mr. Godwin, architect, considerable progress has been made with the restoration of the tower, commenced in the spring. The lower part of the structure was found to be in an actually dangerous state. Many tons of stone have been used below ground to strengthen and support it. The organ here—always a good instrument—has been greatly enlarged and improved by Mr. Vowles, and has been set up in the chancel, part on each side, the works communicating by means of a tunnel. When the old Georgian case in the gallery is removed, the great west window will be exposed to view. This is about to be filled with stained glass, at the cost of Mr. Sholto Vere Hare. Messrs. Hardman, we believe, will have the opportunity it affords of showing their skill. It is a fine chance and should be made the most of. In the south transept, a window, executed by Messrs. Clayton & Bell, and a very charming work, has been quite recently set up. It tells the story of Lazarus, in accordance with a pre-arranged scheme for filling the various windows that are at present glazed with plain glass, and was produced, if we mistake not, at the cost of the vicar, the Rev. H. G. Randall. It is simply inscribed, as a thanksgiving offering for great mercies. The same artists have another window in hand for the church, the Sacrifice of Isaac; and Messrs. Heaton, Butler, & Bayne are at work on glass for the west window of the south aisle, illustrating the Life of Moses; the gift of Mr. Cruger Miles.

When we add that amongst many other works a new post-office is being built in Small-street, that the Assize Courts are to be re-constructed,

* See p. 765.

that there is to be a new hotel in Broad-street, that a new hospital is about to be erected at Stapleton, and that on Monday evening last a new Theatre was opened and the architect shown upon the stage, we shall surely have made good our preliminary assertion, that wonderful activity prevails in Bristol.

## FRESH AIR.

Most people are advocates, in theory, at all events, for fresh air; but few care to think where the difference lies between the smoke-laden atmosphere of a large town and the pure air of the open heath or breezy downs. Much of the exhilaration produced by changing the air of London for, say, that of Salisbury Plain, is undoubtedly due to the difference of scenery and to the sense of freedom from the cares and troubles of this life; but there is something more than this, and an impression has been gaining ground for the last few years, that the quantity of ozone contained in the atmosphere exercises a very important influence on the healthiness of a district. This theory has not only been denied, but the very existence of ozone in the atmosphere has been doubted. The literature of the subject is already very large, and amongst the most important contributions we must assuredly place those of the discoverer Professor Schönbein, of Basle. Putting aside the more elaborate researches, we propose to gather up into a small compass the arguments in favour of the existence of ozone, as stated by Professor Schönbein himself. The subject is well worthy of attention from a sanitary point of view.

When oxygen gas is submitted to a series of electric discharges, it undergoes a remarkable modification, and a peculiar smell is noticed. Amongst the new properties acquired by the gas is the power of liberating iodine from its compounds, a property which is manifested by mixing a soluble iodide with starch-paste, and exposing it to the air which has been thus acted upon. A deep blue colour immediately appears, caused by the combination of the liberated iodine with the starch. Ozone may be produced by other methods, but it is not necessary to mention them. This new power possessed by the oxygen is said to be due to ozone, the ordinary "ozone test" being nothing more than a slip of paper moistened with iodide of potassium and starch.

So far all are agreed, and no one denies that oxygen does undergo some modification when submitted to a series of electrical discharges. Further, it is admitted on all hands that the atmosphere is always more or less highly charged with electricity. Since, then, an electric discharge cannot take place through air without a portion of the oxygen in the path of the spark being converted into ozone,—a fact which is rendered abundantly clear when an ordinary electrical machine is set to work,—it follows that ozone must be formed in the atmosphere by the ordinary operations of nature. It should be remembered that electrical action may still be going on without the palpable evidence furnished by a thunder-storm.

When the ozone test is used for demonstrating the presence of that body in the atmosphere, the opponents of the theory refuse to admit the evidence, saying that similar appearances are produced by other substances which may be, and sometimes undoubtedly are, present in the atmosphere. Besides ozone, chlorine, bromine, and hyponitric acid, have the property of displacing iodine from its compounds, leaving it free to form the well-known blue colour with starch. The occurrence of chlorine and bromine in the atmosphere is very improbable; but with regard to hyponitric acid, Professor Schönbein admits that, during the electrical discharge, the oxygen and nitrogen of the air sometimes combine to form hyponitric acid; and, although the quantity produced in the atmosphere is in all probability very small, it may still be sufficient to liberate the iodine in the test paper. "According to my experiments," says the Professor, "the addition of a very small quantity of hyponitric acid ($N.O_4$) is sufficient to communicate to water the property of producing the characteristic blue colour; but, chemically, pure dilute nitric acid has not this effect. It might, therefore, very well happen that rain-water collected during a severe thunder-storm should possess this property, thus indicating the presence of free hyponitric acid in atmospheric air. No chemist has, perhaps, made more observations on this subject than myself, but I have never met with any rain-water capable of burning starch paste blue, or which indicated an acid reaction with litmus paper, although I have frequently observed that rain-water, when treated with dilute sulphuric acid, *does* communicate a blue colour to starch." This effect is probably due to nitrous acid, set free from the nitrite of ammonia which most rain-water contains. The presence of nitrite and nitrate of ammonia in the atmosphere is explained in the following manner:—Amongst the products of the decay of organic matter on the surface of the earth is carbonate of ammonia, which, being a very volatile salt, evaporates into the atmosphere. When this body comes into contact with the hyponitric acid assumed to be formed by the discharge of the atmospheric electricity, it becomes converted into nitrate and nitrite of ammonia, which salts, in consequence of their solubility in water, are conveyed to the earth by the first shower of rain. The Professor's argument, then, runs thus:—Hyponitric acid has the power of liberating iodine from its combinations, and this acid is formed in the atmosphere by electrical discharges; but it never (or, at all events, very rarely) occurs in a *free* state, being instantly seized upon by the ammonia always present in excess, and formed into nitrate and nitrite of ammonia, neither of which is capable unaided of setting iodine free.

There is, however, another test for ozone depending upon the property possessed by that body of converting the colourless protoxide of thallium into the brown teroxide. Hyponitric acid does not produce this effect, since it becomes decomposed, as we have already seen in the case of ammonia, into nitrate and nitrite of thallium. It is true that this brown compound might be sulphide of thallium, due to the sulphuretted hydrogen contained in the atmosphere; but Professor Schönbein has observed that the colouring takes place when a slip of acetate of lead-paper (the ordinary test for sulphuretted hydrogen) remained perfectly white. In the course of his experiments he discovered that teroxide of thallium assumed a blue tinge when moistened with tincture of guaiacum, so that we have an infallible means of ascertaining whether the brown compound formed when thallium papers are exposed to the air be really the teroxide of that metal or not. Professor Schönbein finds that it is. The thallium test is not nearly so sensitive as the iodide of potassium and starch test. An exposure of twenty-four hours, or even more, is necessary to obtain the brown colour on thallium papers. The shortest time ever observed was on the 6th of January of the present year during a heavy snow-storm, when an exposure of six hours was sufficient. So great was the quantity of ozone that the starch papers were discoloured in the short space of half an hour.

So much, then, for the evidence in favour of the existence of ozone, which has been maintained for some years through evil report and good report by Professor Schönbein. Assuming that the facts already stated are sufficient to prove that ozone is something more than a figment of the laboratory, we proceed to consider the part it plays in the grand scheme of nature. During the decay of animal and vegetable matters large quantities of mephitic gases are generated, the chemical composition of which is not well understood. We do know, however, that they are destroyed and rendered innocuous by powerful oxidizing agents, such as the hypochlorites and the permanganates. The well-known "Condy's Fluid" derives its disinfecting properties from the presence of the latter salts. According to Professor Schönbein's experiments, artificially produced ozone has precisely the same action on fetid exhalations, and it is, therefore, not a far-fetched hypothesis that ozone is nature's own disinfectant. After a severe thunderstorm, the remark is often made that "the thunder has cleared the air," and there is probably more in this than people are aware of. That the air is purer and fresher after a thunderstorm few persons will deny; but much of this is due to the rain which generally accompanies such phenomena. This freshening of the atmosphere occurs, indeed, after most storms of rain, whether accompanied by thunder or not. M. de la Rive, an eminent physicist of Geneva, has recently put forward the opinion that the increased transparency of the atmosphere after rain is due to the removal of the foreign matters and germs or sporules which are perpetually floating in the air, ready to settle and germinate wherever they find a fitting soil. Professor Pasteur's beautiful researches leave little room for doubting that minute fungi really do exist in the atmosphere. To return, however, to our subject. We have already referred to the well-known fact that ozone is generated during the electric discharge; and we should therefore expect to find it largely developed during a thunderstorm. May we not attribute to this a large proportion of the freshening effect experienced on such an occasion? As to the precise manner in which ozone acts we know very little with certainty. The following view of the case has, we believe, not yet attracted attention. Some years ago a theory was started that infectious diseases were propagated by extremely minute corpuscles or organized bodies which floated in the atmosphere and communicated the disease to persons who breathed them. Attempts have been made to obtain these infusoria, or whatever they may be, by suspending large glass globes, moistened with water, in the small-pox and fever wards of hospitals. About two months ago, M. Poulet read a paper before the French Academy of Sciences, in which he showed that infusoria existed in the breath of persons suffering from whooping-cough. He describes two species of monads, or bacteriums, as they are called by some authors, as present in the liquid obtained by condensing the breath of a child attacked by whooping-cough. The infusoria were seen by the aid of a powerful microscope in very large numbers.

It has been shown by Professor Schönbein that comparatively large animals,—such as mice,—are killed by breathing air containing an insignificant quantity of ozone, perhaps in consequence of the rapid inflammation of their tissues. A former pupil of the Professor's, Herr Scharr, of Berne, noticed, whilst making some experiments with permanganates and hypochlorites, that infusoria were immediately killed when immersed in even very dilute solutions of these salts; and he concludes that this effect was due to the rapid oxidation and consequent destruction of the albuminoid substances in the bodies of these organisms. Assuming the theory of the propagation of diseases noticed above to be true, we may, without pushing speculation beyond reasonable limits, state that the comparative absence of epidemic diseases during those periods when the atmosphere contains a large quantity of ozone is due to the destructive action of that substance upon the germs by which such diseases are propagated. We do not wish to be understood as stating that it is absolutely the true explanation of so-called healthy and unhealthy seasons. It is simply an hypothesis, and is not incompatible with the present state of our knowledge of this very important subject.

The great difficulty at the present moment in the way of further investigations is the absence of any method of determining the per-centage of ozone present in the atmosphere. The iodized starch paper hitherto used is certainly a good and very sensitive *ozonoscope*, but we require an *ozonometer*. For purposes of comparison, our present test is as useless as are the indications of the oat-beard and hair hygroscopes compared with those of the wet bulb hygrometer. In extreme cases the quantity of ozone contained in the atmosphere does not, in all probability, exceed one-millionth part. It is obvious that an apparatus of extraordinary delicacy will be necessary for measuring even this,—the largest proportion of ozone with which we have to deal. If science ever supplies the requisite method,—and we see no reason to doubt that it will, sooner or later be forthcoming,—it will, in all probability, be a volumetric process, in which a substance, having a powerful affinity for ozone, will be either coloured or discoloured by its oxidation.

Houses of the Working Classes and the New Reform Act.—Mr. W. E. Hickson writes:—"I thank you for your little notice of my 'Tracts for Inquirers' in the *Builder* of the 5th inst.; but let me urge you not to think lightly of those provisions of the new Reform Act which abolish compounding, disfranchize owners, and substitute the personal rating of temporary occupiers of the lowest class. As affecting the burden of the poor-rates in all districts, and the improvement of the dwellings of the working classes, in which you have always taken an interest, these provisions of the new Act must work as a natural calamity; and the *Builder* might do great service in taking up the subject."

## STATISTIC CONGRESS IN FLORENCE.

The International Statistic Congress — the sixth held since the first assemblage for such interests, in Brussels, in 1853,—concluded its proceedings in the Italian Senate-hall, on the 5th of October. The number of deputies from different countries gathered in Florence for this occasion is reported as 483, of whom ten represented England. Many were the preparations made by the Florentine authorities to show honour to their guests. A "committee of reception," presided over by the Duke Casigliano, was formed with the express object of rendering such attentions and escorting them to visit all the *mirabilia* of this city; another committee, alike aristocratic in composition, charged itself with the ordering of a banquet, illumination, and musical performances, at the Pagliano Theatre, the largest among such buildings here; and the municipality, we are assured, voted 30,000 francs for the expenses of that entertainment. All the leading journals reported the discussions more or less fully; and if tokens of interest on the part of the public, as well as in the minor journalism here so redundant, were wanting, this might be ascribed to the absorbing interest in political questions now uppermost in the Italian mind.

The hall where the Italian senate assembles, in the Uffizi buildings, was a most animated scene during these scientific sessions, owing to the large number present, the variety of subjects discussed, and the warm expressions of approval in which the public, as well as the members of the Congress, took part. Not, indeed, that that public was at any time in great force; for we were surprised to observe how few availed themselves of the facility of obtaining tickets (given most courteously, for the entire course), and how slight the sprinkling of auditors in the strangers' gallery, where, strange to say, the attendance of ladies, in their separate compartment, was generally larger than that of the other sex. The modern and brilliant decoration, paintings, gilt carving, &c., with which that hall of Medici origin was fitted up when first destined to the uses of the senate, did not indeed seem appropriate to the gravity of these assemblies, reminding rather of courts and theatres than of things in the sphere of abstract science. It was to be regretted, also, that the gallery assigned for male auditors is too high-placed to allow of such close attention to the speakers as is requisite for the full apprehension of long discourses illustrated by statistic details. In this case it was better to read than to hear.

At ten a.m. on Sunday, 29th September, was held the inaugural meeting, under the presidency of the Minister of Agriculture and Commerce, Baron de Blasiis, who opened with a not very long but appropriate and well-composed speech, bearing chiefly on the condition of Italy as a field for statistic illustration, and the favourable dispositions of her government for encouraging and promoting whatever tends to national benefit or scientific progress. After this the office of president was confirmed in the person of the same minister, and the members of the Junta (*Giunta Superiore di Statistica*) were aggregated as vice-presidents, together with all the delegates of foreign governments; as secretaries, the four gentlemen who had acted in that capacity at the previous private meetings of representatives, together with four others of different countries, one being English, of the name Brown. The assembly then dispersed, and the rest of the proceedings for this day, not public, were the formation of the sections and what the Italian journals designate as *seggi* (seats), thus distributed:—1. Theory and technicality of statistics; 2. topography; 3. agricultural statistics; 4. communal statistics; 5. monetary and banking statistics, circulation and trustees; 6. moral and juridic statistics; 7. medical and military statistics. On the afternoon of this Sunday, all the members, both of this and the other Congress, that of the Italian Chambers of Commerce, whose sessions had opened on the same afternoon, under the presidency of the same minister, were entertained by the municipality in the palace (ex-ducal) of the Cascine, where refreshments were served, and two military bands kept up concert during the social meeting, the beautiful parks of Florence being throughout this fine evening more gaily frequented by the *beau monde*, on foot and in carriages, even than usual in the hours of promenading on festivals. On Monday, at ten a.m., was the first public assembly of the Statistic Congress for transacting general business, despatched this morning in about an hour and a half, the minister opening with another well-turned discourse; the most animated passage in the debate referring to the question as to the language for future discussions, one deputy (an Italian) proposing the exclusive use of French; others, the language of each nationality, with translations from all idioms except French and Italian, by the secretaries; but such discussions were over-ruled by the minister-president through the simple announcement that this matter had been already settled by the sections; the choice of language to be *ad libitum*, with the system of compendious translations, save from two idioms, as on one side proposed. It would be beyond our limits here to attempt any abstract of the discussions and reports that occupied every day for the rest of this busy week; the daily arrangement for the sections to meet from nine to twelve, and the general public assemblies to be held from half-past twelve to four p.m.; in the last instance, from nine to one p.m.; in the evenings all being invited to spend their time, at pleasure, in the halls on the ground-floor of the Uffizi, connected with the senate-houses, and now serving for a sort of political club. The subjects in debate, and those topics dwelt on in the several memoirs read aloud, went through the general range of statistical science with such collation of relevant facts as did credit to the zeal and research of those engaged, in some cases exciting discussion, carried on with the warmth and gesticulation inseparable from Italian oratory, but not always contributing to make the point at issue more intelligible to auditors. The extreme difference of intonation and delivery on the part of English and German speakers, contrasted with the Italian, was a source of difficulty to the hearers in the galleries; and we had cause to regret the deficiency of our own countrymen in the mode of delivering what itself was well worthy of being listened to. The last public meeting, adjourned, instead of breaking up as announced at one, till two p.m., came to a close at half-past three, winding up with a speech from the ministerial president (suitable as was all that he said) and general vote of thanks, this sitting being in some respects the most interesting, as the topics brought forward were more various than on other days.

In reference to the statistics of art galleries and museums, it was proposed that not only public collections, but the works of sterling value in studios and private keeping should be brought into the sphere of official report. On this took place a discussion of some warmth, participated in by men of note. For the juridic reference it was proposed that not only crime itself, but the moral dispositions of convicts before death should be contemplated. There was also long and able speaking on the hygeian question and the statistics of cattle, the proper limitation for inquiries relating to such interests, &c. It was determined, on the proposal made in a section by M. Quetelet, to found a permanent committee, or section, of Italian statistics. Shortly before the breaking up, was mooted the question of the next international assemblage and its locality: Russia, Sweden, Holland, Switzerland, the countries severally proposed. The Dutch deputy, in the name of his Government, invited the Congress to meet at the Hague; the Swiss deputy made earnest recommendation of his own land, though speaking but in private capacity; and Mr. Lockhart (English) so far anticipated a much desired future as to propose Rome—the elect capital of Italy!

On the evening of that day, the members were entertained at dinner, in the Pitti Palace, by the King, who had invited them, in a few gracious words, on occasion of a general reception, when all had been presented to his Majesty. The English minister sat at the right hand, the Minister of Commerce at the left of the royal host. But the grandest entertainment was the banquet at the theatre, with admission by paid tickets, the Baron de Blasiis, as usual, taking the lead in the speeches that ensued after good cheer, and proposing health "to this Congress and its future, and to the continual development of its scientific conquests;" the Swiss delegate (M. Pioda), "To the Sovereign of this great and beautiful country;" the French delegate (Chev. Legoyt), "To the Minister, De Blasiis, who had so ably discharged his task;" the Austrian delegate (Baron von Czörnig), who had acted as vice-president at the public meetings, and delivered himself in three languages with equal readiness, "To Florence, the capital of Italy, and her worthy magisterial representatives;" lastly, the distinguished writer invited all to drink — not their wine, but their coffee—"To the Solidarity of Nations," proceeding, in a brief but excellent speech—perhaps the best of the occasion—to congratulate on the intellectual fraternity, the common bond uniting peoples for mutual benefit, secured through such means as science and culture are now rendering more and more efficient, so that the countrymen of Göethe, Shakspeare, Thorwaldsen, Canova, Pascal, Galileo, are becoming in a true sense brethren.

Beyond comparison, the most *picturesque* of these scientific entertainments was the reception, on the night of the 3rd, at the ancient Pretorio, *alias* Palace of the Podesta, whose Gothic halls and corridors were illuminated, whilst all those representatives of different nations were mingling in converse under their vaults, and in the largest of the fine old building's apartments was given a supper, served at a late hour; ladies being invited by the authorities to this really memorable *fête*, and musical bands performing in the *cortile*, one of the most majestic specimens of Mediæval civic architecture in Italy. It may be imagined how striking and fairy-like was the effect of this gaiety and lustre, thrown from lamps and tapers, in the interior of that grand, gloomy-looking pile, reminding one of things so different, of conditions of society no doubt more stirring and romantic, but assuredly by many degrees less favourable to human happiness than those in which scientific International Congresses prove possible.

## PHYSICAL EDUCATION.

A very excellent reason exists for that suspicious dislike of the dead languages which is evinced by some of those who most loudly counsel their fellow countrymen to be guided by their advice. To these teachers the fable of the fox who had lost his tail is inapplicable, or at least it should be written for their use in an entirely new version. It should be the Manx cat and the household cats, or the ape among the monkeys. The fable holds in respect to the counsel given—namely, that others should dispense with an ornament not possessed by the lecturer; but the discrepancy lies here, that it is not an ornament lost by that disinterested friend, since it is something in which he is not only deficient, but with the use and value of which he has no acquaintance whatever. The true reason, then, is further to seek, and it may possibly be found to be this, that the man who offers a programme for the future that is perfectly satisfactory to himself, inasmuch as it is the child of his own imagination, has a sort of half uneasy fear of the ghost of the buried past. In other words, he would rather not have his bran new theories contrasted with the experience of those two thousand years of human history of which we find certain relics in the pages of Greek and Latin authors.

The clear perception of the manner in which history ever reproduces itself is rarely attained. The man busily occupied with the present is apt to forget his boyish recollections of the past. The man steeped in the learning of the academy shrinks from the loud din and personal squabbles of the politics of the day. Or if, as in the case of so illustrious an exception as De Tocqueville, a writer brings a profound knowledge of history to illumine his all but prophetic insight into the course of the present and the future, his disciples are but few and rare. The daily journals, which more and more assume the position of the instructors of the public, make it a rule to handle no topics of more than twenty-four hours' growth. There is but little time for a colloquy with the ancients at the disposal of the reader of the morning's news.

It thus comes to pass that we are not unapt to take for granted propositions that are not only unproved, but actually disproved by history. We speak of progress where there really exist decadence and decay. Attention is at this moment directed to one of these subjects, a matter in which the English of the nineteenth century are very far inferior to the Greeks of the Alexandrine age,—inferior not only to the Greeks as Aristotle laboured that they should become, or as Plato dreamed of them in his Utopia; but as they actually were. Nor is this comparison to be made with men of different blood and different climate alone. We can trace an inferiority, not so marked because not so general, but sufficiently marked, in the education of the English gentle-

that there is to be a new hotel in Broad-street, that a new hospital is about to be erected at Stapleton, and that on Monday evening last a new Theatre was opened and the architect shown upon the stage, we shall surely have made good our preliminary assertion, that wonderful activity prevails in Bristol.

## FRESH AIR.

Most people are advocates, in theory, at all events, for fresh air; but few care to think where the difference lies between the smoke-laden atmosphere of a large town and the pure air of the open heath or breezy downs. Much of the exhilaration produced by changing the air of London for, say, that of Salisbury Plain, is undoubtedly due to the difference of scenery and to the sense of freedom from the cares and troubles of this life; but there is something more than this, and an impression has been gaining ground for the last few years, that the quantity of ozone contained in the atmosphere exercises a very important influence on the healthiness of a district. This theory has not only been denied, but the very existence of ozone in the atmosphere has been doubted. The literature of the subject is already very large, and amongst the most important contributions we must assuredly place those of the discoverer Professor Schönbein, of Basle. Putting aside the more elaborate researches, we propose to gather up into a small compass the arguments in favour of the existence of ozone, as stated by Professor Schönbein himself. The subject is well worthy of attention from a sanitary point of view.

When oxygen gas is submitted to a series of electric discharges, it undergoes a remarkable modification, and a peculiar smell is noticed. Amongst the new properties acquired by the gas is the power of liberating iodine from its compounds, a property which is manifested by mixing a soluble iodide with starch-paste, and exposing it to the air which has been thus acted upon. A deep blue colour immediately appears, caused by the combination of the liberated iodine with the starch. Ozone may be produced by other methods, but it is not necessary to mention them. This new power possessed by the oxygen is said to be due to ozone, the ordinary "ozone test" being nothing more than a slip of paper moistened with iodide of potassium and starch.

So far all are agreed, and no one denies that oxygen does undergo some modification when submitted to a series of electrical discharges. Further, it is admitted on all hands that the atmosphere is always more or less highly charged with electricity. Since, then, an electric discharge cannot take place through air without a portion of the oxygen in the path of the spark being converted into ozone,—a fact which is rendered abundantly clear when an ordinary electrical machine is set to work,—it follows that ozone must be formed in the atmosphere by the ordinary operations of nature. It should be remembered that electrical action may still be going on without the palpable evidence furnished by a thunder-storm.

When the ozone test is used for demonstrating the presence of that body in the atmosphere, the opponents of the theory refuse to admit the evidence, saying that similar appearances are produced by other substances which may be, and sometimes undoubtedly are, present in the atmosphere. Besides ozone, chlorine, bromine, and hyponitric acid, have the property of displacing iodine from its compounds, leaving it free to form the well-known blue colour with starch. The occurrence of chlorine and bromine in the atmosphere is very improbable; but with regard to hyponitric acid, Professor Schönbein admits that, during the electrical discharge, the oxygen and nitrogen of the air sometimes combine to form hyponitric acid; and, although the quantity produced in the atmosphere is in all probability very small, it may still be sufficient to liberate the iodine in the test paper. "According to my experiments," says the Professor, "the addition of a very small quantity of hyponitric acid ($N.O_4$) is sufficient to communicate to water the property of producing the characteristic blue colour; but, chemically, pure dilute nitric acid has not this effect. It might, therefore, very well happen that rain-water collected during a severe thunder-storm should possess this property, thus indicating the presence of free hyponitric acid in atmospheric air. No chemist has, perhaps, made more observations on this subject than myself, but I have never met with any rain-water capable of burning starch paste blue, or which indicated an acid reaction with litmus paper, although I have frequently observed that rain-water, when treated with dilute sulphuric acid, *does* communicate a blue colour to starch." This effect is probably due to nitrous acid, set free from the nitrite of ammonia which most rain-water contains. The presence of nitrite and nitrate of ammonia in the atmosphere is explained in the following manner:—Amongst the products of the decay of organic matter on the surface of the earth is carbonate of ammonia, which, being a very volatile salt, evaporates into the atmosphere. When this body comes into contact with the hyponitric acid assumed to be formed by the discharge of the atmospheric electricity, it becomes converted into nitrate and nitrite of ammonia, which salts, in consequence of their solubility in water, are conveyed to the earth by the first shower of rain. The Professor's argument, then, runs thus:—Hyponitric acid has the power of liberating iodine from its combinations, and this acid is formed in the atmosphere by electrical discharges; but it never (or, at all events, very rarely) occurs in a *free* state, being instantly seized upon by the ammonia always present in excess, and formed into nitrate and nitrite of ammonia, neither of which is capable unaided of setting iodine free.

There is, however, another test for ozone depending upon the property possessed by that body of converting the colourless protoxide of thallium into the brown teroxide. Hyponitric acid does not produce this effect, since it becomes decomposed, as we have already seen in the case of ammonia, into nitrate and nitrite of thallium. It is true that this brown compound might be sulphide of thallium, due to the sulphuretted hydrogen contained in the atmosphere; but Professor Schönbein has observed that the colouring takes place when a slip of acetate of lead-paper (the ordinary test for sulphuretted hydrogen) remained perfectly white. In the course of his experiments he discovered that teroxide of thallium assumed a blue tinge when moistened with tincture of guaiacum, so that we have an infallible means of ascertaining whether the brown compound formed when thallium papers are exposed to the air be really the teroxide of that metal or not. Professor Schönbein finds that it is. The thallium test is not nearly so sensitive as the iodide of potassium and starch test. An exposure of twenty-four hours, or even more, is necessary to obtain the brown colour on thallium papers. The shortest time ever observed was on the 6th of January of the present year during a heavy snow-storm, when an exposure of six hours was sufficient. So great was the quantity of ozone that the starch papers were discoloured in the short space of half an hour.

So much, then, for the evidence in favour of the existence of ozone, which has been maintained for some years through evil report and good report by Professor Schönbein. Assuming that the facts already stated are sufficient to prove that ozone is something more than a figment of the laboratory, we proceed to consider the part it plays in the grand scheme of nature. During the decay of animal and vegetable matters large quantities of mephitic gases are generated, the chemical composition of which is not well understood. We do know, however, that they are destroyed and rendered innocuous by powerful oxidizing agents, such as the hypochlorites and the permanganates. The well-known "Condy's Fluid" derives its disinfecting properties from the presence of the latter salts. According to Professor Schönbein's experiments, artificially produced ozone has precisely the same action on fetid exhalations, and it is, therefore, not a far-fetched hypothesis that ozone is nature's own disinfectant. After a severe thunderstorm, the remark is often made that "the thunder has cleared the air," and there is probably more in this than people are aware of. That the air is purer and fresher after a thunderstorm few persons will deny; but much of this is due to the rain which generally accompanies such phenomena. This freshening of the atmosphere occurs, indeed, after most storms of rain, whether accompanied by thunder or not. M. de la Rive, an eminent physicist of Geneva, has recently put forward the opinion that the increased transparency of the atmosphere after rain is due to the removal of the foreign matters and germs or sporules which are perpetually floating in the air, ready to settle and germinate wherever they find a fitting soil. Professor Pasteur's beautiful researches leave little room for doubting that minute fungi really do exist in the atmosphere. To return, however, to our subject. We have already referred to the well-known fact that ozone is generated during the electric discharge; and we should therefore expect to find it largely developed during a thunderstorm. May we not attribute to this a large proportion of the freshening effect experienced on such an occasion? As to the precise manner in which ozone acts we know very little with certainty. The following view of the case has, we believe, not yet attracted attention. Some years ago a theory was started that infectious diseases were propagated by extremely minute corpuscles or organized bodies which floated in the atmosphere and communicated the disease to persons who breathed them. Attempts have been made to obtain these infusoria, or whatever they may be, by suspending large glass globes, moistened with water, in the small-pox and fever wards of hospitals. About two months ago, M. Poulet read a paper before the French Academy of Sciences, in which he showed that infusoria existed in the breath of persons suffering from whooping-cough. He describes two species of monads, or bacteriums, as they are called by some authors, as present in the liquid obtained by condensing the breath of a child attacked by whooping-cough. The infusoria were seen by the aid of a powerful microscope in very large numbers.

It has been shown by Professor Schönbein that comparatively large animals,—such as mice,—are killed by breathing air containing an insignificant quantity of ozone, perhaps in consequence of the rapid inflammation of their tissues. A former pupil of the Professor's, Herr Scharr, of Berne, noticed, whilst making some experiments with permanganates and hypochlorites, that infusoria were immediately killed when immersed in even very dilute solutions of these salts; and he concludes that this effect was due to the rapid oxidation and consequent destruction of the albuminoid substances in the bodies of these organisms. Assuming the theory of the propagation of diseases noticed above to be true, we may, without pushing speculation beyond reasonable limits, state that the comparative absence of epidemic diseases during those periods when the atmosphere contains a large quantity of ozone is due to the destructive action of that substance upon the germs by which such diseases are propagated. We do not wish to be understood as stating that it is absolutely the true explanation of so-called healthy and unhealthy seasons. It is simply an hypothesis, and is not incompatible with the present state of our knowledge of this very important subject.

The great difficulty at the present moment in the way of further investigations is the absence of any method of determining the per-centage of ozone present in the atmosphere. The iodized starch paper hitherto used is certainly a good and very sensitive ozono*scope*, but we require an ozono*meter*. For purposes of comparison, our present test is as useless as are the indications of the oat-beard and hair hygroscopes compared with those of the wet bulb hygrometer. In extreme cases the quantity of ozone contained in the atmosphere does not, in all probability, exceed one-millionth part. It is obvious that an apparatus of extraordinary delicacy will be necessary for measuring even this,—the largest proportion of ozone with which we have to deal. If science ever supplies the requisite method,—and we see no reason to doubt that it will, sooner or later be forthcoming,—it will, in all probability, be a volumetric process, in which a substance, having a powerful affinity for ozone, will be either coloured or discoloured by its oxidation.

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Houses of the Working Classes and the New Reform Act.—Mr. W. E. Hickson writes:—"I thank you for your little notice of my 'Tracts for Inquirers' in the *Builder* of the 5th inst.; but let me urge you not to think lightly of those provisions of the new Reform Act which abolish compounding, disfranchize owners, and substitute the personal rating of temporary occupiers of the lowest class. As affecting the burden of the poor-rates in all districts, and the improvement of the dwellings of the working classes, in which you have always taken an interest, these provisions of the new Act must work as a natural calamity; and the *Builder* might do great service in taking up the subject."

## STATISTIC CONGRESS IN FLORENCE.

The International Statistic Congress — the sixth held since the first assemblage for such interests, in Brussels, in 1853,—concluded its proceedings in the Italian Senate-hall, on the 5th of October. The number of deputies from different countries gathered in Florence for this occasion is reported as 483, of whom ten represented England. Many were the preparations made by the Florentine authorities to show honour to their guests. A "committee of reception," presided over by the Duke Casigliano, was formed with the express object of rendering such attentions and escorting them to visit all the *mirabilia* of this city; another committee, alike aristocratic in composition, charged itself with the ordering of a banquet, illumination, and musical performances, at the Pagliano Theatre, the largest among such buildings here; and the municipality, we are assured, voted 30,000 francs for the expenses of that entertainment. All the leading journals reported the discussions more or less fully; and if tokens of interest on the part of the public, as well as in the minor journalism here so redundant, were wanting, this might be ascribed to the absorbing interest in political questions now uppermost in the Italian mind.

The hall where the Italian senate assembles, in the Uffizi buildings, was a most animated scene during these scientific sessions, owing to the large number present, the variety of subjects discussed, and the warm expressions of approval in which the public, as well as the members of the Congress, took part. Not, indeed, that that public was at any time in great force; for we were surprised to observe how few availed themselves of the facility of obtaining tickets (given most courteously, for the entire course), and how slight the sprinkling of auditors in the strangers' gallery, where, strange to say, the attendance of ladies, in their separate compartment, was generally larger than that of the other sex. The modern and brilliant decoration, paintings, gilt carving, &c., with which that hall of Medici origin was fitted up when first destined to the uses of the senate, did not indeed seem appropriate to the gravity of these assemblies, reminding rather of courts and theatres than of things in the sphere of abstract science. It was to be regretted, also, that the gallery assigned for male auditors is too high-placed to allow of such close attention to the speakers as is requisite for the full apprehension of long discourses illustrated by statistic details. In this case it was better to read than to hear.

At ten a.m. on Sunday, 29th September, was held the inaugural meeting, under the presidency of the Minister of Agriculture and Commerce, Baron de Blasiis, who opened with a not very long but appropriate and well-composed speech, bearing chiefly on the condition of Italy as a field for statistic illustration, and the favourable dispositions of her government for encouraging and promoting whatever tends to national benefit or scientific progress. After this the office of president was confirmed in the person of the same minister, and the members of the Junta (*Giunta Superiore di Statistica*) were aggregated as vice-presidents, together with all the delegates of foreign governments; as secretaries, the four gentlemen who had acted in that capacity at the previous private meetings of representatives, together with four others of different countries, one being English, of the name Brown. The assembly then dispersed, and the rest of the proceedings for this day, not public, were the formation of the sections and what the Italian journals designate as *seggi* (seats), thus distributed:—1. Theory and technicality of statistics; 2. topography; 3. agricultural statistics; 4. communal statistics; 5. monetary and banking statistics, circulation and trustees; 6. moral and juridic statistics; 7. medical and military statistics. On the afternoon of this Sunday, all the members, both of this and the other Congress, that of the Italian Chambers of Commerce, whose sessions had opened on the same afternoon, under the presidency of the same minister, were entertained by the municipality in the palace (ex-ducal) of the Cascine, where refreshments were served, and two military bands kept up concert during the social meeting, the beautiful parks of Florence being throughout this fine evening more gaily frequented by the *beau monde*, on foot and in carriages, even than usual in the hours of promenading on festivals. On Monday, at ten a.m., was the first public assembly of the Statistic Congress for transacting general business, despatched this morning in about an hour and a half, the minister opening with another well-turned discourse; the most animated passage in the debate referring to the question as to the language for future discussions, one deputy (an Italian) proposing the exclusive use of French; others, the language of each nationality, with translations from all idioms except French and Italian, by the secretaries; but such discussions were over-ruled by the minister-president through the simple announcement that this matter had been already settled by the sections; the choice of language to be *ad libitum*, with the system of compendious translations, save from two idioms, as on one side proposed. It would be beyond our limits here to attempt any abstract of the discussions and reports that occupied every day for the rest of this busy week; the daily arrangement for the sections to meet from nine to twelve, and the general public assemblies to be held from half-past twelve to four p.m.; in the last instance, from nine to one p.m.; in the evenings all being invited to spend their time, at pleasure, in the halls on the ground-floor of the Uffizi, connected with the senate-houses, and now serving for a sort of political club. The subjects in debate, and those topics dwelt on in the several memoirs read aloud, went through the general range of statistical science with such collation of relevant facts as did credit to the zeal and research of those engaged, in some cases exciting discussion, carried on with the warmth and gesticulation inseparable from Italian oratory, but not always contributing to make the point at issue more intelligible to auditors. The extreme difference of intonation and delivery on the part of English and German speakers, contrasted with the Italian, was a source of difficulty to the hearers in the galleries; and we had cause to regret the deficiency of our own countrymen in the mode of delivering what itself was well worthy of being listened to. The last public meeting, adjourned, instead of breaking up as announced at one, till two p.m., came to a close at half-past three, winding up with a speech from the ministerial president (suitable as was all that he said) and general vote of thanks, this sitting being in some respects the most interesting, as the topics brought forward were more various than on other days.

In reference to the statistics of art galleries and museums, it was proposed that not only public collections, but the works of sterling value in studios and private keeping should be brought into the sphere of official report. On this took place a discussion of some warmth, participated in by men of note. For the juridic reference it was proposed that not only crime itself, but the moral dispositions of convicts before death should be contemplated. There was also long and able speaking on the hygeian question and the statistics of cattle, the proper limitation for inquiries relating to such interests, &c. It was determined, on the proposal made in a section by M. Quetelet, to found a permanent committee, or section, of Italian statistics. Shortly before the breaking up, was mooted the question of the next international assemblage and its locality: Russia, Sweden, Holland, Switzerland, the countries severally proposed. The Dutch deputy, in the name of his Government, invited the Congress to meet at the Hague; the Swiss deputy made earnest recommendation of his own land, though speaking but in private capacity; and Mr. Lockhart (English) so far anticipated a much desired future as to propose Rome—the elect capital of Italy!

On the evening of that day, the members were entertained at dinner, in the Pitti Palace, by the King, who had invited them, in a few gracious words, on occasion of a general reception, when all had been presented to his Majesty. The English minister sat at the right hand, the Minister of Commerce at the left of the royal host. But the grandest entertainment was the banquet at the theatre, with admission by paid tickets, the Baron de Blasiis, as usual, taking the lead in the speeches that ensued after good cheer, and proposing health "to this Congress and its future, and to the continual development of its scientific conquests;" the Swiss delegate (M. Pioda), "To the Sovereign of this great and beautiful country;" the French delegate (Chev. Legoyt), "To the Minister, De Blasiis, who had so ably discharged his task;" the Austrian delegate (Baron von Czörnig), who had acted as vice-president at the public meetings, and delivered himself in three languages with equal readiness, "To Florence, the capital of Italy, and her worthy magisterial representatives;" lastly, the distinguished writer invited all to drink — not their wine, but their coffee—"To the Solidarity of Nations," proceeding, in a brief but excellent speech—perhaps the best of the occasion—to congratulate on the intellectual fraternity, the common bond uniting peoples for mutual benefit, secured through such means as science and culture are now rendering more and more efficient, so that the countrymen of Göethe, Shakspeare, Thorwaldsen, Canova, Pascal, Galileo, are becoming in a true sense brethren.

Beyond comparison, the most *picturesque* of these scientific entertainments was the reception, on the night of the 3rd, at the ancient Pretorio, *alias* Palace of the Podesta, whose Gothic halls and corridors were illuminated, whilst all those representatives of different nations were mingling in converse under their vaults, and in the largest of the fine old building's apartments was given a supper, served at a late hour; ladies being invited by the authorities to this really memorable *fête*, and musical bands performing in the *cortile*, one of the most majestic specimens of Mediæval civic architecture in Italy. It may be imagined how striking and fairy-like was the effect of this gaiety and lustre, thrown from lamps and tapers, in the interior of that grand, gloomy-looking pile, reminding one of things so different, of conditions of society no doubt more stirring and romantic, but assuredly by many degrees less favourable to human happiness than those in which scientific International Congresses prove possible.

## PHYSICAL EDUCATION.

A very excellent reason exists for that suspicious dislike of the dead languages which is evinced by some of those who most loudly counsel their fellow countrymen to be guided by their advice. To these teachers the fable of the fox who had lost his tail is inapplicable, or at least it should be written for their use in an entirely new version. It should be the Manx cat and the household cats, or the ape among the monkeys. The fable holds in respect to the counsel given—namely, that others should dispense with an ornament not possessed by the lecturer; but the discrepancy lies here, that it is not an ornament lost by that disinterested friend, since it is something in which he is not only deficient, but with the use and value of which he has no acquaintance whatever. The true reason, then, is further to seek, and it may possibly be found to be this, that the man who offers a programme for the future that is perfectly satisfactory to himself, inasmuch as it is the child of his own imagination, has a sort of half uneasy fear of the ghost of the buried past. In other words, he would rather not have his bran new theories contrasted with the experience of those two thousand years of human history of which we find certain relics in the pages of Greek and Latin authors.

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It thus comes to pass that we are not unapt to take for granted propositions that are not only unproved, but actually disproved by history. We speak of progress where there really exist decadence and decay. Attention is at this moment directed to one of these subjects, a matter in which the English of the nineteenth century are very far inferior to the Greeks of the Alexandrine age,—inferior not only to the Greeks as Aristotle laboured that they should become, or as Plato dreamed of them in his Utopia; but as they actually were. Nor is this comparison to be made with men of different blood and different climate alone. We can trace an inferiority, not so marked because not so general, but sufficiently marked, in the education of the English gentle-

man of to-day, as compared with that of the English gentleman of the time of tournaments and chivalry.

The portion of education to which we refer, is that which is strictly physical. It is the purposed, intelligent, systematic training of the bodily powers. At the time when the human intelligence was at its acme, and in the race which subdued the world, the exercises of the palæstra were as incumbent on a youth who hoped for distinction, as were the wisest lessons of philosophy. The great annual games of Greece were not mere assemblages for the purpose of gambling on the speed of horses, or for the exhibition of the most costly toilets. They formed an essential part of the physical education of the Grecian youth. It was not then, any more than now, given to many to excel in very different branches of study. And those branches, moreover, were far fewer, and some of them far more limited, than is the case at the present time. But if chemistry was unknown, if metallurgy was in its infancy, if mathematics were confined to geometry, if astronomy was awaiting the discoveries of Galileo, and if the boldest reach of the navigator was confined to the circumnavigation of Africa, we must not forget that politics was a science, even if some sought to make it a trade, and that the physical welfare of the race was directly cared for by the institutions of legislators, and by the solemn order of the public games.

As Europe emerged from the flood of barbarian invasion, and down to the time when the increasing use of gunpowder tended to equalize the advantages of strength and of skill, and finally to induce the abandonment of defensive armour, the physical education of noble youth received even an undue share of attention. To ride, to use weapons of all kinds, to inure the body to toil, was the object of youthful study and competition. In the chase and in the tournament was to be found the school of the soldier: careful training in manly exercises, for the express purpose of developing bodily strength and skill, was not confined to the aspirant for knighthood. The English statute-book bore witness to the anxiety of our rulers that the yeomanry should maintain that familiarity with the bow which told with such terrible force in our French wars; and in the times of the Stuart kings, when the jack-boot, the squire of the arquebuse, was displacing the jointed plate-armour that had replaced the older mail covering of the legs, the aim of the publication of the "Book of Sports" must not be held to be merely or even mainly polemical. The idea of the primary duty of attention to the physical training of all classes of the nation was only densely obscured by the increasing smoke of gunpowder, and forgotten in the search for gold and the effort to make the most of the maxim that time is money.

Thus it came to pass that the manly out-door exercises which toughened the muscles of our forefathers were more and more regarded as mere amusements. Sour-faced men spoke of them as sinful; sharp-faced men spoke of them as waste of time. The best batsman on the cricket-ground was warned of the end of the idle apprentice. Books and work were extolled at the expense of healthful play. Heavy impositions, useless repetitions framed for the purpose of strengthening the memory (as if memory were a special faculty of the mind, and not a phase of the action of many very distinct faculties), keeping in from the play-ground or the cricket-field, were prevalent in our public schools. At the beginning of the present century physical education had probably sunk to its lowest ebb amongst ourselves, and the peaked bookworm, whom a wise and comprehensive discipline might have developed into a noble man, was held up as the pattern by the teachers of the good-boy school.

The change which we are now witnessing in this respect appears to have sprung from the manly instincts of the nation rather than from the wisdom of its teachers or the forethought of its legislators. Sports, never quite extinct, are becoming more carefully organised. Such an annual contest as the Oxford and Cambridge boat-race has far more of the mettle of the Olympic games than is to be met with at Epsom or at Ascot. An increasing interest in Alpine adventure is apparent. Men whose opinions on education are known and valued advocate something far beyond the mere constitutional walk necessary to the maintenance in working order of that ill-used machine, the brain of the hard-reading student. In that great military academy which exacts from the candidates for admission a standard of mathematical proficiency, and of acquaintance with language, either living or dead, and with physical and classificatory science, of an order that claims the very respectful attention of the Oxford first-class man and of the Cambridge wrangler, the utmost care is given to the exercises of the perfectly-appointed gymnasium. Dangerous and idle use of this portion of the machinery of education is rendered impossible, at the same time that proper and beneficial use of it is made obligatory. The result is the supply for the services of our engineer and artillery corps of a set of men who, in accomplishment of mind and of body, as well as in discipline and in the habits of gentlemen, are, if not *facile principes*, at least second to none in the world. More and more through our larger schools the gymnasium is becoming recognised as a place, not of idle amusement, but of essential importance to complete education.

With this great improvement of the day arise, as usual among us, the clash and conflict of opinion. Much of this would be avoided if men would only devote to the real study of a case on which, very likely, they feel not only strongly, but properly, the time which they consume in shouting out their own crude opinions. The man who is perfectly aware of all that is known on a subject is never vociferous, never violent, never over-bearing. It is the totally or the partially ignorant man who is intolerant,—the imperfectly-convinced man who insists on his convictions with the most acrimony. When a child first acquires a new idea it hastens to communicate it to its fellows. *Monsieur Jourdain's* wonder and delight at learning "*tout ce qui n'est pas vers est prose*" is instantly communicated to *Nicole*, in the absence of a fitter pupil. Take a subject on which actual knowledge is unattainable, and it is just the one on which controversy is most fierce. What ever exceeded the fury of the *homoousian* and the *homoiousian* quarrel? Thus it is very natural that men who, manly sportsmen it may be themselves, are personally unaware of what well-ordered and systematic training can actually effect, should clamour for the open air and unchecked exercise of rowing, or of other less regulated sports, as the proper substitutes for the gymnasium. No less natural is it for those who have become aware of the ill-effects of exercises carried to excess, such as rowing, for instance, when pursued as a passion, and not regulated by an experienced trainer, to discredit our returning attention to our too-long neglected physical education. Common sense and daily observation, experience that may be acquired in a few years no less than the testimony of history, our duty to posterity no less than our regard to our own completeness of life, all point to the extreme importance of the provident and well-counselled development of the body, no less than of the mind, by appropriate and effective training.

In a national point of view, physical education will, perhaps, hereafter, as it was formerly the case, be regarded as possessing claims on the attention of the legislator, even prior to those of moral and of intellectual tuition. Morals are, to a certain extent, conventional. The code differs amid different races. Science is subject to that change which is a condition of healthy growth. But so many inches round the chest, and such a girth of the arm, are facts independent of theory. A stalwart and able population has a double value in a political sense: it constitutes the hope of the future no less than the safety of the present. In it we look for the fathers of future men and women, as well as for the defenders of our coasts. Nor must it be lost sight of that the equalising effect of gunpowder has reached its limit, and that with every improvement now introduced in its application, the advantage of the able-bodied soldier, able in skill as well as in celerity and in endurance over his weaker competitor, becomes more apparent. The soldier is no longer mere food for powder. The statistics of the battles of the century, if their accuracy may be relied on, show that it takes as many or more rifle-bullets to kill a soldier as was the case with the heavier balls of Brown Bess. Sadowa was gained by the marching powers of the Prussian troops as much as by the needle-gun. To say nothing of accuracy of aim, a subject which attracts, and deservedly attracts so much attention in our rifle-grounds, aptness for rapid manœuvre and for sustained fatigue, is an element of the utmost military importance. Drill is much simplified. With the Snider rifle the old manual is at an end. The endless routine of "Shoulder arms! Ground arms! Port, ho! Charge bayonets!" is superseded by a simpler set of movements. The less the soldier is embarrassed with a cumbrous manipulation of his arms the more he is at liberty for a complete and improving gymnastic training. The more fatal and deadly become our projectiles, and the means of discharging them, the higher must we rank the value, and the more carefully must we study the education, of the soldier. The finer, the healthier, the more skilful, and the more enduring are our soldiers, the higher will be the physical status of our whole nation. The art of war has done much to brutalise the private soldier: it is now needful to raise him in the scale. The improvement in destructive, no less than that in constructive, machinery must ultimately serve to the elevation of the human race.

Gymnastic training holds the middle ground between neglect and the useless severity of the pipe-clay and pig-tail school. It neither leaves the man a clod, nor stiffens him into a machine. The gymnastic teacher looks askance at the time-honoured stock that still maintains its place in the British uniform, with scarcely less disfavour than at the heavy iron-shod boots which have devoured the calf of the rustic. The man who can go with ease through all the feats of the vaulting-room, the bars, and the trapesium, will be the one most ready to scale a precipice or to afford prompt aid in any emergency. He is equi-distant between the bumpkin and the mere drill-sergeant, and is worth more than the pair of them put together. Propriety of dress, not smartness alone, but fitness for the greatest amount of service with the least fatigue, is yet far from being attained, either in the army or out of it. How many questions on this score are still open! how many are yet openly set at nought! Which is the best boot? which the best great-coat? which the best hat? No reply has as yet been given to these questions by one consent. The well-known defect in the gait of our heavy-booted country swains, the destruction of the calf of the leg, and the slouching and fatiguing walk that are characteristic of the ploughman and the wagoner, are constantly recurring proofs of the need of some guidance more correct than an instinctive sense of comfort. The long-stirrupped, rupture-threatening seat still maintained by our cavalry is even a more inexcusable error in exactly the opposite direction. The completion of the gymnastic code, and the subordination of dress, of drill, and of seat, to the requirements of the gymnastic trainer, are matters of no trifling importance to the country, and improvements which we no longer despair of seeing carried into effect.

May we offer a word of advice to our professional brethren in this matter? It is this. In every design, for school, or college, or public building, in which provision is in any way to be made for the home or the education of youth, let them never lose sight of the necessity for a commodious gymnasium. Not a damp patch of ground, garnished with one or two poles and swings, such as we could point out within the walls of a building that assumes for itself a high rank among our educational establishments. A lofty, light, water-tight roof, a floor boarded throughout, and padded under the bars and poles, with a distinct portion of the building set apart for spectators, should be considered as essential a part of a scholastic building as either class-room or theatre. Great comfort and perfect adaptability can be attained at small expense, but not without proper forethought. Let those who are in want of precedent to guide them, pay a visit to the noble gymnasium at the Royal Military Academy at Woolwich. Let us add one other caution. The gymnasium, when provided, is intended for education,—not, as in the instance of the open yard above referred to, for rough and bearish larking. Such a use of its facilities involves danger to limb or even to life, and should be strictly and carefully prohibited. The eye of the principal, and the invariable presence of a fully-qualified attendant, are requisite to make the gymnasium the scene of a noble branch of education, not the mere resort of mountebanks and of roughs.

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Art-Union of London and the Mansion House. — The Right Hon. the Lord Mayor (Gabriel) has invited the Council of the Art-Union of London to a dinner at the Mansion House on Friday, the 25th instant, and will have a large party to meet them. This will be the last state dinner of the present mayoralty.

## THE WROXETER EXCAVATIONS.

The excavations at Wroxeter, which had been discontinued during the harvest time, were again commenced about a fortnight ago. A spacious room has been discovered and laid open, 34 ft. long by 32 ft. wide, having in its centre a square bed of stone, similar to the one found in the apartment called the enameller's shop, and which probably sustained a central pillar which supported the roof. A good many curious things have been found, especially in what has been a *latrina*. As usual, plenty of hair-pins and cocks' legs have been collected. But the greatest rarity brought to light was a small clear red cornelian stone, six-eighths of an inch in length, and of an oval shape. It had probably been set in some metal, and used as a seal or signet-ring. It was deeply cut or engraved so as to represent in the centre a large goblet or vase, on each side of which, perched upon a round stand, was a parrot well characterised by the hooked beak: from the mouth of each issues a stream of liquid flowing into the bowl. Before this remarkable work of Roman art could be placed in the proper museum-case, it was shown to a party of "gentlemen," one of whom, it is supposed, must have slyly made off with it, as it can nowhere be found. An impression in wax had fortunately been taken, so that the article can at any time be identified. It is to be hoped the thief will now see the uselessness of retaining such a relic, which he dare not show to any one in respectable society, and that he will therefore send it back to the museum before the police get hold of him and it.

## STRATFORD TOWNHALL COMPETITION.

A correspondent writes as follows,—"The account in the local papers of the meeting of the Board to decide on the designs, shows that the author of the selected design marked 'Civis,' was known to several members of the Board to be their own surveyor, Mr. Lewis Angell, F.R.I.B.A. Before competing, I applied through a friend to one of the most influential members of the Board to know whether they had any particular architect in view, and was assured that they had no preference for any one architect, but that all would be fair and straightforward. One of the clauses in the conditions says,—'Any competitor communicating his motto, directly or indirectly, to any member of the Board, will be disqualified from receiving a premium.' How, I ask, could the members of the Board have known that the plans marked 'Civis,' belonged to their surveyor unless the above condition had been infringed, whereby Mr. Angell is 'disqualified from receiving a premium'? I have no doubt that the selected plan is the best, as the author would have opportunities of knowing exactly the requirements of the locality which no stranger could possibly possess. But why the Board should advertise for designs when they had a Fellow of the Institute of Architects at hand, with a suitable design, passes my comprehension."

The Board have acted most injudiciously, if not unfairly. With an architect acting as their officer, if they considered that he was in a position to carry out the work, with his other duties, they might very properly have placed the matter at once in his hands; but having appealed to the profession at large, they should not have allowed their surveyor to compete. His position would necessarily give him advantages, and his selection, they might be sure, would bring down, as it has done, a cry of unfairness that no explanation could wipe away. One of the local papers writes,—

"If such a building is really essential for the best interests of the parish, the ratepayers have no cause to regret the selection. On the contrary, it must be some consolation to them to know that the choice has fallen upon the surveyor to the Board, inasmuch as had any other plan been accepted, a sum of 500*l.* or 600*l.* would have been paid as commission for superintending the erection of the building; but the Board will hardly award this to their surveyor, in addition to his present handsome salary, for the duty could only be performed in the Board's time."

Whether or not this belief weighed at all with the Board in making the selection we do not know. If so, they will doubtless be disappointed. Mr. Giles, at any rate, is not an officer of the Board. We make no question as to the superiority or otherwise of the selected design (the elevation has considerable merit: the plan we have not seen); our objection rests solely on the ground we have stated. The proceedings of the Board before selecting the designs ought to be instructive. Some of the members were anxious that an architect should be called in to assist in the selection, and the clinching circumstance that led to the rejection of a motion to that effect was the fact set forth that even if an impartial professional man were appointed to the task, there would be the same abuse of the referee and questioning of the decision as if the Board had acted for themselves. The question whether, spite of this unseemly and unwise conduct, the decision in the former case would not nevertheless be the better one, was not raised. Every member of the profession, indeed every person anxious for the right conduct of competitions, is interested in putting a stop to the proceedings pointed to in this discussion, or the result will be that no architect with any regard to his own dignity will accept the office of referee, should any committee still think it desirable to invite him so to act.

## THE LATE MR. CHARLES FOWLER, ARCHITECT.

We heard with great regret of the death of this gentleman, on the 26th of September, at his residence, Western House, Great Marlow, Bucks. Mr. Fowler was in his 76th year: he was born at Cullumpton, Devon, where his family had been settled for several generations. At the age of fifteen he was bound apprentice for *seven* years, as the manner then was, to Mr. John Powning, at Exeter, architect and builder, as he styled himself (he held, we believe, the appointment of surveyor to the Dean and Chapter of the Cathedral). During this long apprenticeship Mr. Fowler, no doubt, acquired that thorough knowledge of all the practical details of his profession for which he was remarkable. Soon after the expiration of his articles, in 1814, he came to London, and entered the office of Mr. David Laing, who was then engaged in the building of the new Custom House and numerous other works. Here he became acquainted with Mr. Tite and Mr. Bellamy, who were fellow-students, and whose friendship he retained to the end of his life. He appears to have remained with Mr. Laing between three and four years, after which he commenced practice on his own account. His first work of importance was the building for the Courts of Bankruptcy in Basinghall-street, completed in 1821. In 1822, he sent designs in competition for the proposed new London Bridge, for which he obtained the first premium out of fifty-two competitors; but he was not allowed to carry out his design. He also made designs for bridges at Kingston, Littlehampton, &c.; but the only one he carried out was that at Totness, over the river Dart. The following list of buildings designed and executed by Mr. Fowler is taken from the inscription on a silver trowel formerly in his possession, and used in laying the several foundation-stones:—

Totness Bridge, 1826; Hungerford Market, 1831; Exeter Lower Market, 1835; Charmouth Church, 1835; Honiton Church, 1835; Brickleigh Church, 1838; Devon Lunatic Asylum, 1842; London Fever Hospital, 1848; Waxchandlers' Hall, 1852.

To these may be added Covent Garden Market and St. John's Church, Paddington; small markets at Gravesend and Tavistock; extensive works at Powderham Castle, for the Earl of Devon; several country seats of minor importance, &c., &c. The work to which, perhaps, more than any other, Mr. Fowler owed his professional reputation, particularly abroad, was Hungerford Market, now removed; the peculiarities of the site and the different levels to be accommodated afforded great opportunity for the designer's skill, both in the arrangement and architectural treatment. Those who only knew the building in its subsequent altered form would be unable to realise the striking effect produced by the original arrangement.

In the earlier part of his professional career Mr. Fowler frequently engaged in public competition, and several of his most important works were obtained in this manner. In conjunction with his friend, the late Mr. Sievier, the sculptor, he submitted a design for the Nelson monument in Trafalgar-square, to which the second premium was awarded.

Mr. Fowler was one of the founders of the Institute of British Architects, and for many years filled the office of honorary secretary, and subsequently that of vice-president. He was also a member of several other learned societies.

Mr. Fowler commenced his professional life in Red Lion-square. From thence he removed to Great Ormond-street; and subsequently, for nearly twenty-five years, he resided in Gordon-square. In 1852 he was induced by failing health to retire into the country, and soon afterwards he withdrew from professional practice. He continued, however, to take an active interest in professional matters, and never relinquished the use of his pencil and drawing-board, amusing himself with working out different architectural ideas, which occupied his mind to the last.

His son, Mr. Charles Fowler, an accomplished member of the profession, is district surveyor of St. Giles's-in-the-Fields and St. George's, Bloomsbury.

## EARLY CONSTITUTION OF THE "OFFICE OF WORKS."

The Committee of Professional Practice appointed by the Council of the Institute of Architects, recently considered as to the remuneration paid by the Commissioners of Works and Public Buildings to the architects employed by them, and have now printed some "Rough Memoranda on Professional Practice," extracted from reports on the Board of Works, 1813—1828. The commencement of their minute shows the early constitution of the Board of Works, and is interesting,

"Our attention," they say, "was first directed to the Report from the Commission of Inquiry into the conduct of business in the Office of Works, ordered by the House of Commons to be printed the 3rd June, 1813. This Report of the Commissioners states the mode in which the business of the Board was conducted from the 12th October, 1705, to Lady-day, 1715, passing on to the constitution of the Office of Works in 1742, within which period (p. 6) 'Sir Christopher Wren held the office of Surveyor to the Board of Works, and Sir John Vanbrugh that of Comptroller.' 'In 1718 Mr. W. Benson' (who was not of the profession), whose history is so much involved in mystery, 'was appointed to the office of Surveyor,' with 'power to appoint a deputy, and he appointed Mr. Colin Campbell,' whom the Commission 'believe to have been an architect of eminence.' From 1718 (p. 7) the office of Surveyor-General ceased to be held by a professional person, 'and a Deputy Surveyor, receiving 180*l.* per annum salary, as such,' is one of the officers enumerated in the list. Soon after the commencement of the reign of George III., two architects, with a salary of 300*l.* each, were added to the establishment, and the offices of Surveyor of the Royal Gardens and of the Private Roads ceased to be held by professional persons; and in the eighth year of the reign of George III. a new set of regulations was established, and the Board consisted of the Surveyor-General, Comptroller-General, Master Mason, Master Carpenter, and two Architects, and in addition there were six Clerks of the Works, having the power of appointing labourers in trust. It appears that in 1783 the Surveyor-General had possessed, in right of office, two extensive houses and premises in Scotland Yard, another at Hampton Court, and another at Kensington. Sir W. Chambers (p. 8) seems to have been the active member of the Board, and had the special superintendence of the works at Somerset Place (House) (p. 9), and he was allowed only 2½ per cent., *by deduction from the tradesmen's bills*, for his trouble and expense in superintending the works at Somerset Place, and in keeping and making up the general accounts of the same; but that, on a representation to the Treasury of his loss by this service, he was allowed to charge in addition 2½ per cent. on the expenditure. Sir W. Chambers had also a house, which belonged to him as Comptroller, worth 150*l.* per annum. On the occasion of the new works, and considerable repairs executed at the public prisons subsequently to the riots of 1780, the Clerks of the Works, immediately superintending these services, were allowed, under the authority of the Treasury, 2½ per cent. on the amount of the bills for their trouble in making plans, in attending the execution of the work, and in measuring and making up the bills for the same, agreeably to the prices of the Office of Works, but that it was directed that *this per-centage should be deducted from the bills so settled, and not be charged over and above the same; for the public was not to be put to any additional expense*;—a most clumsy device to

conceal the true state of the case; for if the tradesmen had to bear this additional charge upon the fair trade profits, they would add it to the prices charged, and thus the public would have to pay the value of the services of their office, despite the transparent attempt to keep them in ignorance of the fact. The Commissioners quote a return of salaries received as follows:—

The Surveyor-General, Mr. Keen (p. 9), received clear per annum 687*l.* 16s. 4½d.; the Surveyor of Private Roads, Mr. Fane, per annum, 730*l.* 11s.; and the Paymaster, Mr. Selwyn, per annum, 1,017*l.* 11s. 7½d. The Paymaster's advantages arose from a salary of 3d. in the pound on all payments made by him.

The Act of 22nd of George III., chap. 82 (p. 9), suppressed the principal offices of this department, and directed (p. 10) that all H. M. buildings, which had been under the management of the Board of Works, should thenceforth be under the direction of some one person appointed by H. M. Surveyor or Comptroller of H. M. Works (the said Surveyor or Comptroller being *bonâ fide* by profession an architect or builder), with such officers or clerks under him as His Majesty might from time to time direct and appoint.

It appears that the Clerks of the Works were to be allowed a convenient habitation or apartment at the place of their appointment, in which they were constantly to reside, and they measured the works and rendered their accounts to the Surveyor, Examiner, and Inspector.

Mr. Wyatt was at the head of the department (p. 24) at the time this report was made (1813) (p. 14), had a salary of 510*l.* per annum, and an allowance of 10*l.* for stationery. He was architect to the Ordnance at a salary of 280*l.* per annum; Surveyor to Somerset-place at 200*l.*, with allowance of commission on extra works of 5 per cent. (p. 97). He had been much employed in superintending as an architect some very important works carried on under special votes of Parliament, and he had extensive practice as an architect. On the occasion of Lord Nelson's funeral he charged for his attendance, and for all new works at Somerset-place, and for the works carried on under votes of Parliament, he received a commission of 5 per cent. He had, in virtue of his office, the appointment of labourers in trust, of the constant labourers, gate-keepers on the king's road, the office-keeper, messenger, and tradesmen. Mr. Wyatt occupied an apartment in Windsor Castle attached to his situation of Surveyor-General of the former Board of Works, and it seems to have belonged to the Surveyor-General as far back as Sir Christopher Wren's time.

Mr. Wyatt admitted that there were no peculiar duties to be executed by the Surveyor at Windsor, but added that his attendance was more required where the king resided, in order to give his Majesty information respecting the works carried on in other places. It was, perhaps, for this reason, that residences were assigned to the Surveyor-General at Hampton Court and Kensington,—these places having been formerly the residences of King William III. and George I. He was at no expense for taking measurements of works (p. 99), or making out accounts of same, and only gave so much of his own time as was necessary. With respect to the Clerks of the Works, as they were then called,—but which at the present day would more properly be called resident architects,—it is stated that, with the exception of the Clerk of the Works for Windsor, they were all educated for the higher branches of their profession, carrying on practice, having salaries varying from 250*l.* to 100*l.* per annum, and all having official residences within their respective departments, as directed by the instructions, and they seem to have been allowed from 2 to 2½ per cent. on occasions of any large expenditure on new works carried on in their departments. They had to measure the work and make out the accounts.

The Commission (p. 45) suggested a reconstruction of the Board, to consist of a Superintendent, who should also be the Public Accountant for the department (and not necessarily an architect), and two Architects, a resident and assistant Clerk, and six Clerks of the Works. The Architects to be men of eminence, with a salary of 500*l.* per annum. And when employed under the orders of the Treasury in carrying on any extra works in places or districts, not within the Office of Works, an allowance of 2½ per cent. on the tradesmen's bills. In the case of the Houses of Parliament, or Speaker's House, no extra allowance to be made to the Architects. One of these officers to be always in attendance to make up the Board. The Clerks of the Works (or resident Surveyors) were to have salaries varying from 300*l.* to 200*l.*

'The salaries and advantages of the clerks of works, ought to depend on the quantity of business under their care, and on the different situations in which they may be placed (p. 47). We propose, consequently, that the clerk of the works having the care of Hampton Court, and the Richmond and Kew departments, should have a salary of 300*l.* per annum, with a residence at Hampton Court. The clerk of the works for Kensington and the Queen's Palaces, 250*l.* per annum, and a residence at Kensington. The same description of officer for Windsor, &c., 200*l.* per annum, and a residence; and 250*l.* per annum to the clerk of the works for St. James's and Carlton House Palaces, and the mews; and 300*l.* to the clerk of the works for the Whitehall and Westminster departments, according to the arrangements before mentioned, and 50*l.* per annum additional unless residence can be provided for them; and to the remaining clerk of the works, who is to have the care of the Tower, the Rolls-buildings, and the prisons, 200*l.* per annum, and 50*l.* per annum, or a residence, if Somerset House be put under his care; and we propose that an allowance of 5*l.* per annum be made to each of these six officers for stationery. The appointment of these officers should rest with his Majesty, as is the case at present.'

'The duties (p. 48), now executed by the clerks of the works are, as we have before shown, rather those of surveyors; but whilst professional men, of the qualifications and respectability of those now holding these situations in the department, will undertake the employment in consideration of the salaries and advantages hitherto annexed to it, we would not propose any further alteration in this part of the establishment; neither do we see any objection to their carrying on private business, if in the opinion of the superintendent, such employment does not interfere with their official duties. The propriety of this arrangement must, however, depend entirely upon the competency of the labourers in trust, to execute those duties which it was intended by the instructions should be executed by the clerks of the works. We think, therefore, that as the clerks of the works are to be responsible for the labourers in trust, they should have the appointment of them, subject to the approbation of the Board, as appears to have been the regulation under the former constitutions of the department, and subject also to their being suspended or removed by the same authority. They should have residences in their respective districts or places, which they should occupy themselves; and a daily constant attendance should be required of them during the usual hours of work, unless their respective principals, the clerks of the works, should give them leave of absence: but notice of this leave should be communicated to the office.'"

## THE COMMISSION OF MONUMENTS AT LIÉGE.

THREE years ago a commission of monuments was appointed to the charge of certain of the public buildings in Liége. During the interval that has elapsed the members of this commission have unfortunately deemed themselves competent to deal with the renovation of some of the most celebrated and important structures, including the world-famed church of St. Jacques. The arabesque treatment of the vaulted roofs of this structure is one of the most delicate wonders Mediæval times have left us; nevertheless, they have not hesitated to deal with it as though it were in truth as common as they have contrived to make it. The groining of the nave, aisles, transepts, choir, chapels, and the intersection of the nave and transepts, is arranged to form different designs. The mighty ribs rising out of the stately piers and reed-like columns, and spreading out like so many stems, divide each compartment into angular sub-divisions, all of which are studded with bosses and medallions and teem with arabesque conceptions rendered in the most harmonious colouring. All the central angular panels of the nave roof are filled with medallions, surrounded by light feathery foliage mixed with flowers; and the prominent ribs are picked out in bands of colour, yellow, red, and blue, with a black and white zig-zag border, alternating with yellow, blue, and green, finished with the same zig-zag border. In the centre of each rib is a long length of yellow, and the arrangement we have mentioned occurs in each case between these broad bands of gorgeous colour and the four bosses on the points of intersection. The bosses are carved and coloured. They represent frequently the heads of men, occasionally those of women, sometimes full-length figures of saints, and there are instances of birds. The heads are treated in the most fanciful fashion, the wreaths of foliage with which some are surrounded proceeding from their mouths, others being crowned, helmeted, turbaned, capped, and hatted. A circle of gold surrounds both medallions and bosses, save in rare instances. In like manner the choir is treated, except that angels playing musical instruments are freely introduced into a set of bosses terminating the ribs that vault downwards from a crowning boss, representing the Majesty, and that each panel is filled with flowers and foliage, to the exclusion of medallions. Each roof is marked by a similar slight variety in the design. All of them, with the spandrels of the arches of the nave, are treated with the same spirit, and the colouring is of the same tone throughout. Under the auspices of the Commission a trial piece of repainting of the ribs in the most staring and astounding of bright colours was approved, and the whole of the vast spider-web work of ribs is now painted from end to end in the same fashion. "*Heureusement*," sighed our guide, "*le fond ils n'ont pas touché.*" The graceful flowing and intertwining arabesque work on the panels is left untouched. But the effect of the contrast of the prodigiously lavish use of yellow ochre and other staring colours upon the ribs against this ancient, subdued, and beautiful back-ground is intensely offensive and disastrous. "*Tout le monde les blâme*," acquiesced our guide, in answer to our expostulations. It is difficult to understand why the ribs should have required so thorough a re-painting, when the panels are sufficiently good to remain. We can only conclude that the Commission was unaware that it was possible to renew any decayed or effaced portion of the work, to correspond with the ancient part, without wiping out good and bad together. Some years must now elapse before anything like harmony of tone can again prevail. And the disparity is never likely to be quite overcome, for as the ribs mellow down with age, the same lapse of time will not be unfelt by the already ripe colouring on the panels.

A second want of feeling is exhibited in the renewal of the tracery of some of the windows. The ancient mullions and flamboyant tracery have been removed, leaving the ancient arch mouldings and jambs *in situ*; and new tracery of an offensive whiteness inserted beneath the ancient time-stained mouldings. Removed thus from all association of idea with the form of the window openings or with the colour or identity of the stone of the whole of the exterior, the new tracery has the most meaningless, marring, and intrusive effect.* St. Jacques, we perceive, retains possession of its ancient stalls. A large organ in a Renaissance case occupies the whole of the gallery at the west end.

In the cathedral the choir has new tiers behind tiers of stalls, screen, and altar-rail of light oak of early Mediæval design, untouched by colour. We have no fault to find with these except that they impress the beholder more with a sense of the lavish expenditure of money on oak than with any artistic excellence.

Perhaps the crowning display of want of wisdom is the travesty of noble work, executed at St. Martin's-on-the-Hill. In the choir of this edifice we find an absurd attempt to copy the wondrous roof of St. Jacques. The fan-groining ribs and bosses are there, but very much depressed in their arched forms. The whole is painted, recently, in the gaudy yellow ochre and other colours in imitation of the original, and has a most theatrical aspect.

There is really need for a judicious renovation of a part of this structure that affords one of its chief sources of attraction to strangers. The view from the top of the tower is magnificent, and not to have seen it is not to have seen Liége. But the ascent, instead of being made safe and commodious, is as perilous as it well can be. The adventurous being who sets out on this aërial tour, after paying the franc charged for the opportunity, leaves the ground for a short distance by means of an ordinary and tolerably-proper stone turret-staircase, which, however, soon stops short, and the rest of the ascent is made by a series of shaky step-ladders through the different floors of the bell-tower. The rickety oak steps and the loose handrails are indeed dangerous companions, and the platforms by which every step-ladder is reached, as one after the other is climbed, are pit-falls. Not unaccustomed to climbing ladders and walking-planks at great elevations, we own there is good cause for fear here, and that at heart we commended the prudence of a fellow-climber who declined to complete the ascent, and turned back half-way up. Arrived at the summit, by dint of grip and scramble and dexterous selection of strong points and the avoidance of weak places, the stranger steps out upon the gutters at the top of the tower, and makes the tour of the four sides round the parapets. Here his only protection from wind, or

* If the mullions and tracery were decayed, doubtless, they should have been removed; but they should have been replaced by stone work of the colour and kind of the mouldings with due regard to the integrity of the edifice, not by careless patchwork.

giddiness, or any kind of mortal sickness, or the indefinable longing to take a header from high places that is almost irresistible to some temperaments, is a low parapet about a foot high! Below lies the city, once boasting sixteen gates, the cathedral, the castle, the palace, the council-house, the famous monastery, and a convent, all blocked together by the busy streets, and watered by the Rivers Meuse and Ourthe, which are spanned by bridges, and seem to tie the intersected parts of the city together. And beyond the great mass of roofs and house-tops, between them and the girdle of mountains in the distance, lies a landscape as lovely, as full of hills and dales, waterfalls and streams, as our own famous Highlands. We point out to the Commission a remunerative investment for their money, as well as an attraction to the edifice, in the provision of a safe and easy mode to ascend this tower. This would be more to the purpose than daubing with yellow ochre one of the most delicate pieces of arabesque colouring bequeathed us.

## FROM MELBOURNE.

*The New General Post-office.*—After about nine years, during which it has been in course of erection, the new General Post-office has arrived at completion, and been appropriated to the purposes for which it was designed. The fittings are all of South Wales cedar, and cost something like 6,000*l*. The building is heated in cold weather by hot-water pipes, supplied by Messrs. Bobardt & Co., and the floors will be covered with cocoa-nut matting. The lighting arrangements are on Dempster & Co.'s patent. Perhaps the most faulty of the internal arrangements in the whole building are the sanitary. Baths for the mail guards and delivery who travel all night by coach in rain, heat, or dust, ought to have been provided. The lavatories are also very circumscribed. The large clock shown at the Intercolonial Exhibition will be placed at the north end of the Elizabeth-street arcade, in juxtaposition with the postal boxes. Little short of 30,000 persons visited the building the first day of its opening. The general contractor for the work has been Mr. Samuel Amess. The entire cost will be nearly 140,000*l*. After the public had retired, a few friends met Mr. Amess to congratulate him upon the completion of the work. Not the slightest accident had occurred in the erection.

*St. Jude's Church, Carlton.*—The foundation-stone of this church was laid by the Bishop of Melbourne, in October, 1866; and that portion of the building now erected was opened for public worship in March last. The site of the church is the most elevated in Carlton. It is about half an acre in extent. The style of the architecture of the church, the first of its kind in Melbourne, is the Pointed Gothic of Italy, or Lombardic, and the material is brick. The general structure consists of Hawthorn bricks, relieved with red and white quoins, arches, tracery, and other ornaments. Freestone is sparingly used for springers, drips, &c., and the roof is covered with slate of different tints and forms. The chancel measures 23 ft. by 12 ft.; the vestry, 12 ft. square. The nave, when completed, will measure 80 ft. in length, its width is 42 ft., and the highest point from floor to ceiling is 44 ft. The tower, serving also as an entrance-porch, is 135 ft. high to the top of the roof. The windows are glazed with cathedral glass, and bordered with stained glass. The chancel window is ornamented with the emblems of Faith, Hope, and Charity. The artists were Messrs. Ferguson, Urie, & Lyon. The reading-desk is surmounted by a displayed eagle, designed and carved in cedar by its donor, Mr. Felix Terlecki, wood-carver. Another friend, Mr. C. C. Tewster, an amateur sculptor, designed and executed in Charente stone, and presented, the baptismal font. A bell has also been presented to the church by Mr. Lee. Messrs. Reed & Barnes are the architects, and Mr. John Pigdon, of Carlton, is the builder. The *Australian News*, to which we are indebted for these particulars, gives a good view of the exterior of the church. This paper is profusely illustrated. The last number which has reached us contains, besides numerous other engravings, a very large one, showing a series of panoramic views of Melbourne itself, which really merits the name of a great city, with its numerous public edifices, and its long and spacious streets.

## PROVINCIAL NEWS.

*Taunton.*—The inmates of Huish's Almshouses in Hammet-street have shifted their quarters to the new almshouses in Magdalene-street. Messrs. Giles & Robinson were the architects, and Mr. John Spiller was the builder.

*Birmingham.*—The estimate of Messrs. J. Cresswell & Sons has been accepted for the erection of the new Birmingham and Midland Bank. The work has already been commenced, under the superintendence of Mr. Edward Holmes. The site is opposite the Exchange buildings, in Stephenson-place, immediately adjacent to the Central Railway-station, and occupies the central position of New-street. The two principal fronts will be erected in Portland stone (being its first introduction as a building stone in Birmingham). The columns and bases of the portico will be of polished granite.

*Gloucester.* — The Children's Hospital, at Kingsholm, near this city, has been formally opened. The building has been erected at a cost of upwards of 3,000*l*. Mr. Jacques, of Gloucester, is the architect. The entrance is approached by a broad gravel road from the highway. On the left are the cloisters, 150 ft. in length, connecting the Hospital with St. Lucy's Home. The sick-wards are reached by a broad staircase, open to the roof, and furnished with a lift, for raising invalids, and for other purposes. On the first landing there are two wards,—one for boys, containing seven beds; and another for girls, with eight beds. The walls are decorated with coloured Scriptural pictures. Each ward has a nurse's room adjoining, and several rooms for attendant nurses. At the end of the landing is a small chapel, with a stained-glass window, the centre of which represents the Crucifixion, with the figure of St. John on the right, and the Virgin Mary on the left. At the top of the house is another ward,—called the infection ward,—furnished with seven beds for boys. There is a nurse's room adjoining, with a small dispensary. There is to be accommodation for twenty-three beds. There are several linen-closets, a bath-room, and two servants' bed-rooms. On the ground-floor is the servants'-hall, leading to the cooking-kitchen, which is fitted with a gas-stove, and every convenience. Adjoining this is the laundry, with scullery, wash-house (underneath which is a large tank, holding 10,000 gallons of soft water), and back kitchen. At the north wing is the convalescence-room, decorated with appropriate texts of Scripture, and other offices. There are several outbuildings, including the mortuary, the gift of a lady, over the door of which is inscribed "The angels do alway behold the face of My Father which is in Heaven."

*Hereford.*—The improvements at the Infirmary within the house have been begun, in accordance with the recommendations of Dr. Bristowe, the inspector from London, for its complete ventilation and improvement. A large number of men are employed, with the view of limiting the inconvenience it occasions to the shortest possible time. The contracts for extending the staircases at each end of the building to the top, with large glass lanthorns over each; for building up two tiers of new waterclosets in the back angles of the Infirmary, and removing the present ones from the wards; for making two large wards back and front; for re-arranging the wards, and including all collateral expenses, amount to 887*l*. 15*s*. This sum completely exhausts all the funds at the disposal of the committee. The estimated cost of putting in gas, with all the fittings, burners, and lamps complete, is 110*l*.

## NEW CHURCH NEAR LUTON, BEDFORDSHIRE.

A new ecclesiastical district is being formed near Luton, in Bedfordshire; and sites have been given, and a church and parsonage are being built upon them by Mr. John S. Crawley, of Stockwood, near Luton. The church is substantial, and contains a nave, chancel, chancel aisles, vestry, south porch, and warming crypt. The nave is 58 ft. long and 26 ft. wide; the chancel 36 ft. by 20 ft.; and the chancel aisles 20 ft. by 10 ft., opening to the chancel by a double arcade on each side, supported upon polished marble pillars.

The walls generally are 3 ft. thick, that of the west front, which is surmounted by a double bell-cote, being 4 ft. thick, and are faced inside and outside with cream-coloured bricks, relieved with bands of red Mansfield stone. All the door, window, and arch dressings are of free-stone. The roofs are open-framed with pitch pine timber: they are boarded with pitch pine above the rafters, and covered with felt and green Pembrokeshire slates, finished with red Mansfield stone ridge tiles. The roofs are intended to show the raw timber, without either staining or varnishing. All the seats are in pitch pine, unstained, but varnished. A carved oak screen divides the chancel from the nave; and the chancel contains stalls arranged choir-wise, a double sedilia, piscina, and credence.

The east wall will be decorated with a reredos of enamelled tiles, with a carved stone brattishing over. The works, which have now progressed to the level of the window-heads, are being carried out from the designs and under the superintendence of Mr. Thos. Nicholson, diocesan architect, Hereford.

## ST. GEORGE'S CHURCH, TUFNELL PARK, HOLLOWAY.

This church, which is peculiar in plan, was consecrated on the 28th ult. The building is arranged as a large circle, 85 ft. 6 in. diameter, with eight 10-in. iron columns supporting arches 31 ft. in height, and octagonal clearstory above, which central octagon is no less than 54 ft. 8 in. diameter; the total height of it from floor to ceiling being about 50 ft. East of the circle, the plan runs out into chapel-like projections or aisles to the chancel, which is 36 ft. long and 25 ft. wide, with circular end. The total length from west to east of the church is 120 ft. internally. The accommodation is for 1,040 adults on the ground floor. The building is of Kentish rag, and Bath stone dressings: it is intended some day to erect a lofty tower and spire. Up to the present time the church has cost, including heating, gasfittings, &c., about 6,000*l*. The architect is Mr. George Truefitt. Messrs. Carter were the builders.

## ST. ALBAN'S CLOCK TOWER.

Travellers in England have all seen and remember the famous clock tower of St. Alban's, in Hertfordshire. What an old-world, useless thing it was in our grandfather's time, who was wont to tell strange stories about it to the Hugh Little Johns of modern Verulamium. Not unlike old Barbican in London, "moth-eaten fort," time and neglect had eaten deeply into it; and St. Alban's clock tower had become a neglected nuisance; the peaceful bell-hung fortification of the wars of York and Lancaster, sunk to a patched Batty-Langleyed, bricklayered, old trunk, sad sight to the eyes of antiquaries, who look with true Mediæval eyes on its many associations. This year of 1867 has happily seen its restoration under the watchful eye of Mr. Scott.

Our object in prefacing these stray remarks is to call public attention to the appropriate use to which the clock tower of St. Alban's is now put. The warder of the tower can send messages further far and infinitely quicker,—

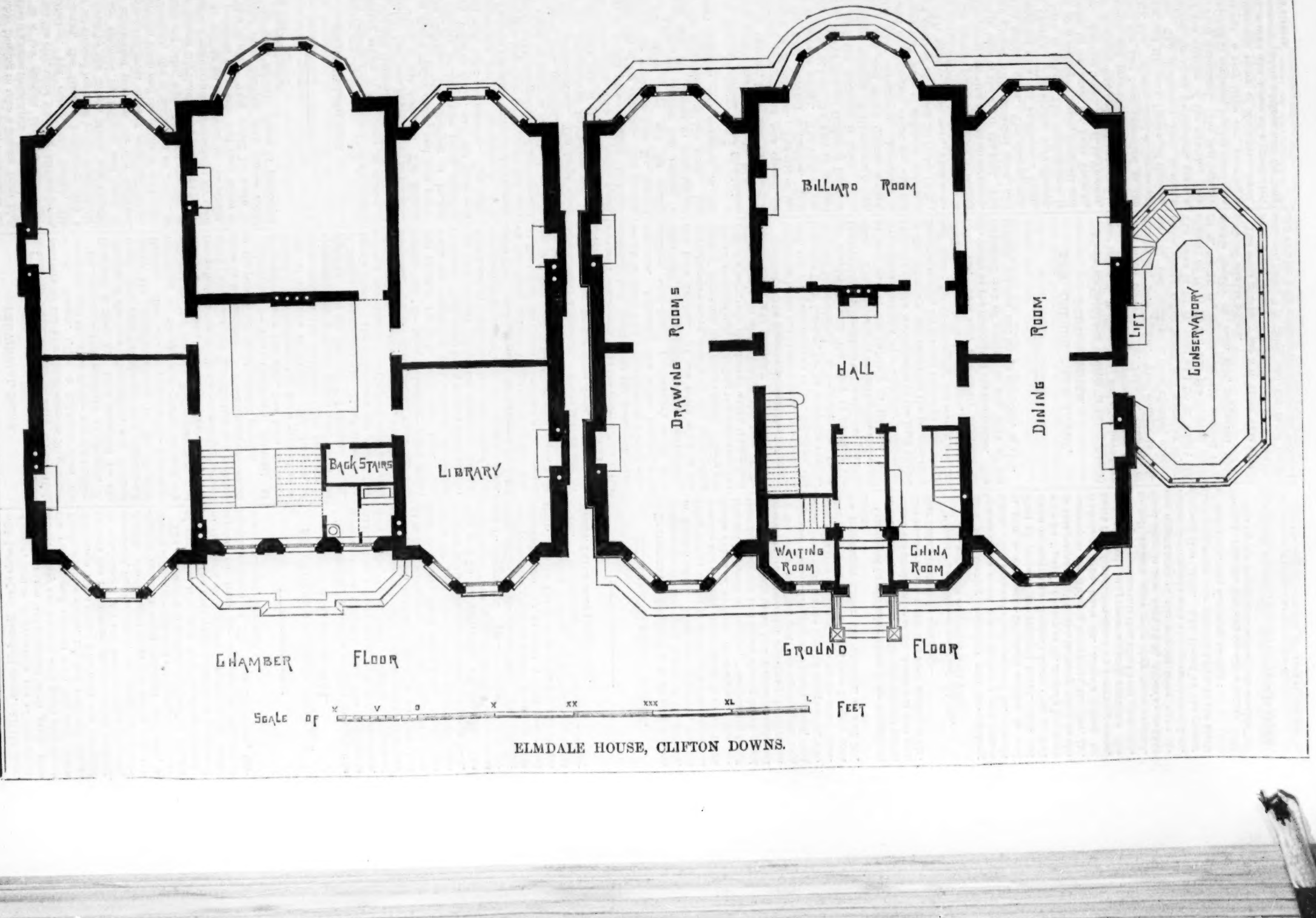
> "Speed the soft intercourse of soul with soul,
> And waft a sigh from Indus to the Pole,"—

than the blazing bale-fires and far-reaching beacon-lights could cover in Tudor and Stuart times. The restored clock-tower of St. Alban's is now a magnetic-telegraph station to and from all parts of the *civilized world*. Few old cities or towns in England have done so well with its "past" history as St. Alban's has done in this instance. Thanks, in many ways, to the memory of the Abbey's late rector, the Rev. Dr. Nicholson, who knew St. Alban's Abbey by heart from foundation-stone to crowning-stone, and worked to preserve and continue the memory of monuments that often need memorials to tell unborn ages why they were erected. Good time is now kept in St. Alban's; so that the apprentices of the sainted town have no reason to complain with the apprentices of London and Bow Bells. The threat of the young Cockneys, some four centuries ago, to the clerk of Bow Bells, was alarming enough:

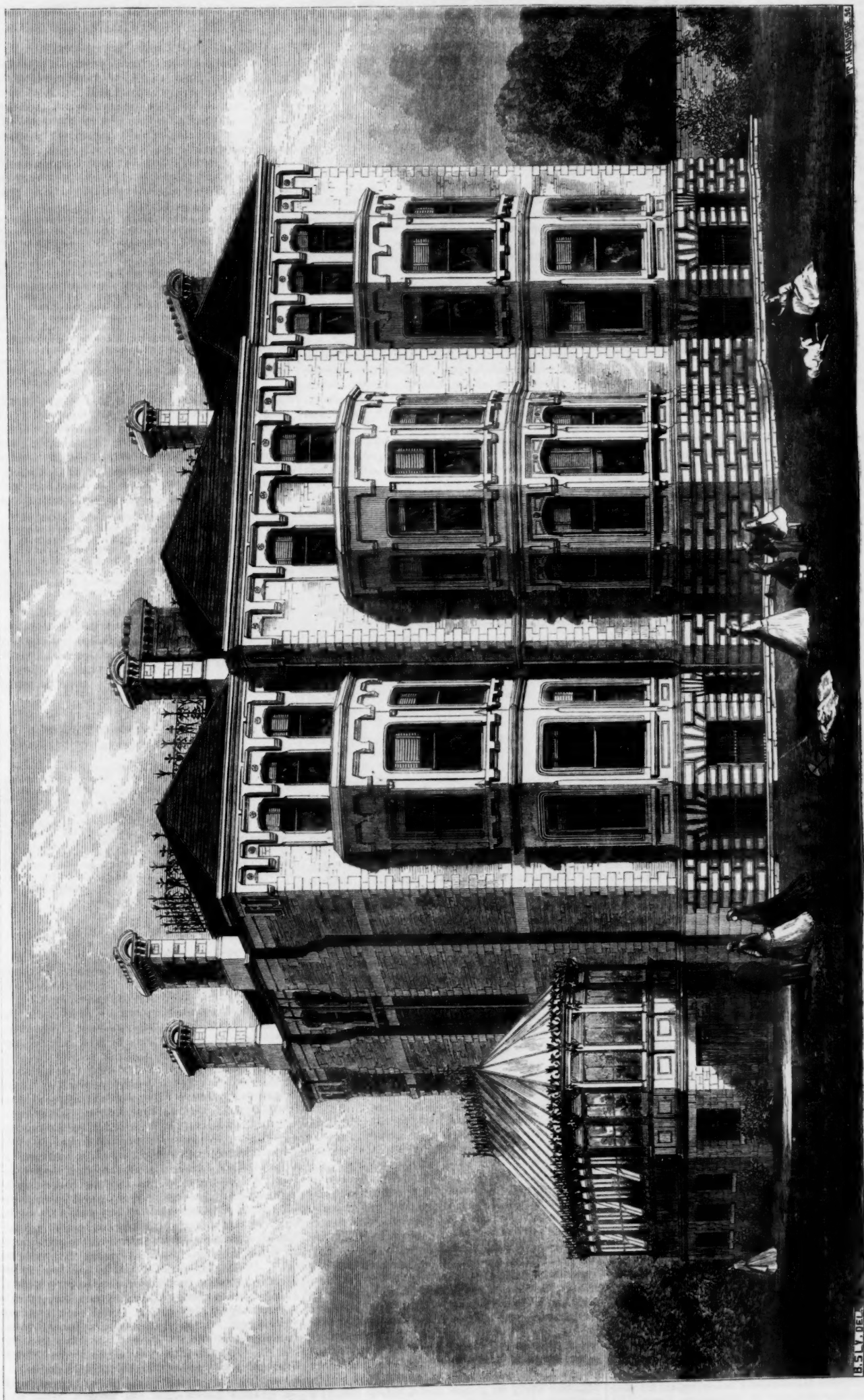
> "Clark of the Bow Bell, with the yellow lockes,
> For thy late ringing thy head shall have knockes."

Significant enough. The clerk replied in rhyme:

> "Children of Cheape, hold you all still,
> For you shall have the Bow Bell rung at your will."




ELMDALE HOUSE, CLIFTON DOWNS.



ELMIDALE HOUSE, CLIFTON DOWNS, BRISTOL.—Messrs. Geo. & Henry Godwin, Architects.

[See p. 757, ante.

## THE OPERATIVE FLINT-GLASS MAKERS AND THE QUESTION OF EDUCATION.

A CONFERENCE of the Flint-Glass Makers' Society of Great Britain and Ireland is held every three years, and at the last of these, which was held in Edinburgh within the last few months, the delegates took into consideration the question of the better education of boys learning the trade. The subject was introduced by Mr. John Cartwright, of Oldswinford, near Stourbridge. Since then a circular to the employers has been issued, urging their co-operation. In this circular the operatives propose:—

"1st Suggestion: To establish schools in the various districts solely connected with the trade, to be open on Mondays and Saturdays, or such other times as may suit the working hours of the districts. These schools may be taught by employers, by the better educated operatives, or by their nominees. One-third of the expenses to be borne by employers, and the other two-thirds by the Flint Glass Makers' Society. Boys to pay a small sum weekly to form a fund from which to give prizes annually, in tools, books, &c., to such of them who have attended most regularly and made most progress during the year. Boys to find their own books, slates, &c. 2nd Suggestion: To compel boys to attend a national, or other public school, when off work, on Mondays or Fridays, and to obtain the services of a trained or other approved schoolmaster; to have school open for our boys and apprentices half-days on Saturdays."

They suggest that a fine should be inflicted on boys for neglecting to comply with any regulations which masters and workers may agree to; and, after about two or three years from the time of making such provision for their better education, no boy should be advanced to make foot who could not read, write a legible hand, and pass a simple examination in arithmetic.

"In issuing this to our employers [they add], we are aware that we are only taking the initiative in a direction which many of you have already intimated a wish for, and that without your hearty co-operation, any effort of ours to improve the intellectual condition of the boys and apprentices will, to a very great extent, prove abortive. We, therefore, the more earnestly ask you to give a serious and candid consideration to its contents."

We believe the masters have the subject now under consideration. From replies already received from individual manufacturers, it appears that the proposals of the men are regarded in a friendly light, and it is hoped will lead to some practical issue.

## NORTHERN ARCHITECTURAL ASSOCIATION.

THE quarterly meeting of the Northern Architectural Association was held on the 8th inst., at the Old Castle, Newcastle-on-Tyne, Mr. John Green in the chair. The following officers for the ensuing year were elected:—President, Mr. John Green; vice-president, Mr. Matthew Thompson; hon. treasurer, Mr. R. J. Johnson; hon. secretary, Mr. T. Oliver; hon. solicitor, Mr. G. W. Hodge; council, Mr. Greener, Mr. A. M. Dunn, Mr. John Johnstone, Mr. F. Charlton, and Mr. Wm. Peachey. Mr. Pearson was elected an associate. The meeting discussed the conditions of the Durham Union Workhouse Extension Competition.

## FIRES IN SCOTLAND.

THERE has been a series of fires in Scotland, all accidental, so far as is known, within the last ten days.

On Wednesday in last week the most serious of these fires, so far as regarded loss of life, occurred in the Canongate, Edinburgh. This is one of the best known streets in the "Old Town," and is flanked with exceedingly lofty houses,—the palaces of bygone times,—separated by narrow, dismal alleys. These houses, now occupied in flats, with a common staircase, each contain a sufficient number of families to people a small hamlet. The shop on the ground-floor of one of them was occupied by a maker of fireworks. A rocket he was engaged in making exploded in the ramming, causing further explosions, which set fire to the premises. A great volume of flame stopped egress by the common stone staircase, and at the same time sent suffocating fumes into the many rooms above. The occupants of the rooms at the time were mostly women and young children, the men being at work and the elder children at school. The women rushed to the windows, screaming frantically, and a most painful scene occurred. Five persons were killed, and a still larger number were burned or otherwise injured. Fortunately prompt help was given, or the consequences would have been far more calamitous.

On the night of the following day a tan-yard took fire at the bottom of North Gray's Close, on the north side of the High-street, midway between the North Bridge and Leith Wynd. This place is surrounded by numerous closes, the crowded and unwholesome dwellings of a host of poor people. The whole of these adjoining buildings were placed in the most imminent peril by the fire. Crowding upon each other in pestilential confusion, and towering in all directions to most unwieldy heights, it seemed all but hopeless, with this fierce naked fire rising up in the midst of them, to prevent a general and most disastrous conflagration. The tan-yard buildings were destroyed, but happily the fire did not extend to any of the surrounding closes.

On Thursday morning, at an early hour, a fire broke out in Dalhousie Castle, on the banks of the South Esk, near Dalkeith, and eight or nine miles from Edinburgh. The fire originated in an upper-story room, called the sky-parlour. After the fire had been so far subdued as to allow investigation to be made, it was found that the third and attic stories of the main portion of the building were a total wreck; that the sky-parlour and the room below it were totally destroyed; and that the roof of the staircase had given way. The fire, happily, was kept out of the east wing; but in consequence of the great quantity of water poured upon that part of the building, it was percolating to the ground-floor, while in the middle section of the castle, the second and drawing room floors were drenched. The library and other rooms in the west wing were uninjured. In the east wing a great quantity of water percolated from floor to floor. The damage to the castle, which is covered by insurance in the Scottish Union, has been estimated at about 3,500*l*.

At Dundee a great fire took place on the night of Tuesday in last week, by which two ship-building-yards were ravaged, timber and buildings burnt, and two ships on the stocks, and nearly finished, were entirely destroyed. The property destroyed in the yard containing these vessels is thus estimated: the whaling ship, 13,000*l*.; composite ship, 7,000*l*.; general loss, 15,000*l*.; total loss, 35,000*l*. In the other yard it is calculated that three or four thousand pounds will clear the loss.

In the Canongate fire, at Edinburgh, the want of fire-escapes was lamentable. No such thing as a fire-escape seems to be in use. Ladders and ropes, and even sheets, were used for lowering those in peril, but no fire-escape. The Lord Provost, in allusion to this extraordinary want, said, at a meeting of the Justice of Peace Court, that "it was felt that more lives might have been saved had the city been furnished with a fire-escape: it would be the duty of the town-council to procure one as soon as possible. They would also take measures immediately for looking into the system of selling and preparing fireworks in the city." This they have much need to do, as well as to establish stricter police regulations for the management of fires. The want of proper organization was manifest. Great complaints were made by the inhabitants of North Gray's-close and adjoining closes, of thefts committed while the fire was going on. Houses were entered by bands of roughs, pretending to help to rescue furniture, and in many cases it was not seen again. Some houses left by their inmates with locked doors, on going out to watch the progress of the fire, were found broken into and the contents removed. Great quantities of furniture were destroyed.

## STEAM ROAD-ROLLERS.

IT is to be hoped that ere long no macadamised road will be left in the rough state for poor horses to flatten with feet and wheels. A new steam road-roller, made by Messrs. Richard Moreland & Son, has been tried in Hyde Park, in the presence of Sir J. Thwaites, Mr. Bazelgette, Mr. Pollard, and various other gentlemen connected with the Metropolitan Board of Works. The trial was conducted under the direction of Mr. Mann, the superintendent of the park and park roads. The road had been specially prepared with metal, sand, and water. A very few passages of the roller speedily reduced the road to a smooth surface. The operations of the machine met with general approbation. The new roller, however, has not been constructed for metropolitan use, we are sorry to say, but for the government and municipality of Bombay. It is designed in accordance with a recent patent of Mr. D. Thomson, and consists, externally, of a square wrought-iron casing of great strength and rigidity, which is nearly balanced on a large central roller, with the engine on one side and the boiler on the other. On the boiler side are two leading wheels, which take only a small portion of the load, and serve for steering. The boiler is vertical, on the Field principle, and the engine works direct on the large roller, by means of two pitch chains, without any intervention of gearing. The dimensions are:—Diameter of roller, 7 ft. 6 in.; length, 6 ft.; length of external casing, 18 ft. 6 in.; width, 8 ft.; height above roadway, 8 ft.; diameter of steering-wheels, 3 ft. 6 in.; width, 1 ft. 2 in. The machine was shown turning at right-angles into roads, and is quite manageable even in a crowded street. When at work it is not turned round at the end of its course, but goes backwards and forwards with equal facility. The vertical boiler is said to be a great source of safety. The diameter of the boiler is 4 ft. 3 in.; height, 10 ft. 6 in.; two cylinders, 11 in. diameter, 1 ft. 6 in. stroke. The pressure of steam is 100 lb. per square inch, and the gross weight 25½ tons—21½ tons on roller, and 4 tons on steering-wheels.

## THE QUANTITATIVE THEORY; OR, THE DOCTRINE OF DEFINITE PROPORTIONAL RELATION WITH REFERENCE TO THE HARMONIES OF SOUND AND COLOUR.

SIR,—In my work, "The Science of Moderation; or, The Quantitative Theory of the Good and the Beautiful," portions of which have appeared from time to time in the columns of the *Builder*, I attempted to prove that all things exist in, and that all harmony in nature is fundamentally resolvable into, *definite proportional relation*. That there is but one scale of ratio, or of the relation of one quantity to a second, of which 2 : 0 represents the extremes and 1 : 1 the mean; but one scale of gradation from 1 to 0, 1 and 0 being the extremes or limits. And not only this, but that the principle involved in the monochord appertains to all phenomena fluctuating between limits or extremes, the compass of variation being the unit holding the same relative position to each species that that does to the variety of musical notes. Also that there are certain points of agreement in the greater fitness of things, and to sense, in the variations of phenomena within the tenor half of their respective scales; and in the universality of the law of quantitative compensation in external nature and in sense, which may be thus generally expressed,—that any temporary persistence of phenomena to one extreme of their scales of variation necessitates, at some time or other, an equivalent reaction in the opposite direction, in order to re-establish that balance, or mean state, which is eternally maintained in nature directly or indirectly. This principle of compensation producing harmony both of colour and sound has long since forced itself upon the attention of musicians, painters, and scientific men. An eminent musical composer once said to me, "Music is a system of balance;" and painters know that *good colour* is also a system of balance. I have also shown that the same principle of compensation, of balance, holds in the planetary system, not only by surmise, but by the testimony of celebrated astronomers; and I might trace it in meteorology, politics, &c. There is, therefore, not merely an analogy, as often noticed and discoursed upon, between the harmonies of music and colour, but a certain fundamental identity; nevertheless, there may be certain specialities in the organization of each sense which prevents absolute identity in both systems of harmony, but I hope to be able to show by some curious experiments, at no very distant date, other points of conformity than those I have already mentioned.

Consider for a moment the logical conclusions which the adoption of the popular theory of the correlation of forces lead to. If all the powers of nature be only modifications of force, sound and colour have the same fundamental form, and all the differences in notes and colours are only proportional. The correlation theory, therefore, is resolvable into a more fundamental theory still—the quantitative. For force is only a form of sense underlying others more complex; but quantity is a more general form, and the only firm basis of the human understanding. If, however, force be considered as a noumenon, which appears to me to be the error of modern physicists, it would be homogeneous and could only be recognised in proportional relativity, and find exact expression in measure and number. Professor Baines recently, in an able article in

*Macmillan's*, on "The Theory of the Correlation of Forces in reference to Mental Phenomena," inevitably passes into a quantitative estimate of functional power such as I had previously formulated from the more abstract and general point of view of the quantitative theory. I feel, however, how difficult it is to express oneself concisely concerning these *outpost* subjects of the understanding; but as I have thought them over with much labour, I trust there will be a reader or two who will not throw them aside without pondering them a little while. I believe metronomy will be the great science of the future, and hope you will favour me with space on another occasion for a more elaborate investigation of the theory of colours. W. Cave Thomas.

## CLAM SHELL FOR FOUNTAIN.

The "clamp" shell your correspondent refers to is the shell of the so-called "Giant clam" (*Tridacna gigas*) of the West Indies. There is an enormous specimen in the Church of St. Sulpice, Paris, used as a holy-water stoup. A pair of small specimens may be purchased for 3s. or 4s., but the larger ones vary greatly in price. A single shell will sometimes weigh two or three hundredweight.

They are often brought to this country by sailors and others, as curiosities, or to be sold to dealers. Iamrach, of St. George-street, E., is the man who usually buys them to sell again; or, after him, they may probably be bought of Cutter, of Great Russell-street. W. G. S.

## THE BELLS AND CHIMES OF THE ROYAL EXCHANGE.

Public attention having lately been called to the subject, I offer a brief account of the bells and chimes in the tower of the Royal Exchange.

I may first observe that, in one of my former communications on bells and chimes, is the following remark:—"If in any case the number of bells can be increased to fifteen, or more, so much the better." Allow me now to give an example. If you have a peal of twelve bells tuned to the diatonic scale, in the key of C major, by adding three extra bells, F sharp, its octave, and B flat, you can modulate to or set tunes in two other keys,—namely, G and F major. Moreover, certain passages can be played in A, E, and D minor.

Now, the bells of the Royal Exchange, fifteen in number, were cast by Messrs. Taylor, of Loughborough, and are tuned according to the above example, the note of the largest bell, which weighs 34 cwt., being C. The chime machinery, constructed by the late Mr. Dent, has a metallic cylinder with movable pins: so that if the force of the action were perfectly equal and regular—assuming, of course, the intonation of the bells to be accurate—a variety of pleasing melodies might be neatly performed.

The tunes at present set on the cylinder are "God save the Queen," "Auld Lang Syne," "The Roast Beef of Old England," and "The Hundredth Psalm." The clock now chimes the quarters, and strikes the hours, as usual. But the tune-chimes are silent, the machinery being imperfect. Thomas Walesby.

## COFFEE-HOUSES AND OUR SUNDAY.

Is there no one possessing wealth, and at the same time a sufficiency of selfish practicality and desire for his pecuniary advantage, who can perceive that there is a large scope for action in opening coffee-houses for the people, where, while temperance may be greatly promoted, instruction of progressive character may be obtained?

Coffee-houses, until the last four or five years, were comfortable and rational resorts, and always filled with the temperately inclined and useful knowledge seekers. They should now be even more attractive and more in number. Without doubt they would always be thronged with customers, instead of being emptied of them as we now see. What an immorality and vile anomaly are presented to us by the fact that many thousands of single persons leading compelled solitary lives, and possessed of tolerable incomes, down to the very poor in means, have no other resource after church or chapel service, or spiritural soul culture, is ended, at about 8 p.m., than to go either to their dens, or lodgings, and to bed, or else to a gin and beer palace. Yes, a palace wherein ruin to body and soul is drawn in under the guise of a false social enjoyment. And this is progression in England and in London in 1867, or is it not more truly a very terrible retrogression?

A very large majority of our single men and women, who are compelled to lead isolated lives because they are removed from their friends by death or distance, are forced into intemperance; for most of the coffee-houses are closed at nine or half-past nine on ordinary days, while on Sundays, when they should be open all day long, they are (with but a very few exceptions) all closed against the seekers of temperance refreshments and rational enlightenment. They are now dirty disorderly places, where tea, coffee, &c., are sold utterly unfit to drink, having only one or two newspapers and no serial publications. Their customers have also no opportunity to study books that would elevate their minds.

It is a disgrace to any country, and especially to one so advanced as England is (or was), that tens of thousands should be unable to procure temperate liquid refreshments, and have no place to sit in and acquire useful, truthful knowledge, and this is the case in London.

Scintilla.

## PUNISHMENT FOR DEFACING MONUMENTS.

A paragraph in the "Miscellanea" of your issue of September 14th, headed, "Defacing a Monument," leads me to suppose that the public are ignorant of the existence of a very stringent law enacted to punish those who injure monuments exposed to public view, whether in churchyards or elsewhere. The statute to which I refer is the 24th & 25th of Victoria, cap. 97., sec. 39., and the primary cause of its enactment was the wanton destruction of the Portland vase. The penalty is imprisonment and whipping. A reference to the Act will show that it is very effective, and if only put into force would give ample protection to our ancient monuments. The only case on record of a trial under this Act was a Crown prosecution * of a man named Gleeson, for injuring ancient sculptures at Clonmacnoise, in Ireland. The trial took place on July 11th, 1864, at the King's County Assizes, when the accused party escaped by the disagreement of the jury. James Graves.

## THE HERTFORD UNION WORKHOUSE.

Mr. Henshaw, whose tender was the lowest, offered, when security was required of him, to deposit 500*l.* in good bonds. The guardians at first required sureties to the amount of 2,000*l.*, but ultimately said they would be contented with 1,000*l.* in bonds. This, however, Mr. Henshaw refused to give, and has thrown up the work. The tender of Mr. H. Norris, at 7,847*l.*, has since been accepted by the guardians. Mr. Norris is engaged at this moment, amongst other things, on the enlargement and repair of Wareside Church, in the same county, under the direction of Messrs. Godwin.

## ANOTHER COMPETITION, LUTON.

Sir,—Your condemnation of the injustice which is so often practised on architects and builders in competition matters must be a sufficient excuse for troubling you with this letter. Some months since, the Local Board of Luton advertised for plans for a Corn-exchange and other buildings, and received, in answer to their advertisements, a number of elaborate designs. As to their choice in the selection they made is not for me to comment upon, but I know that some of the best drawings were laid aside, in consequence of the outlay, which, in their judgment, exceeded the amount limited in the conditions. Why was the work not given to the author of the first premiated design? Had he no friends at Luton? Whether he had or not, the committee seemed to think it desirable to get the four architects whose designs were selected to again rack their brains in another competition. In this second contest it was clearly stated that any design exceeding 2,000*l.* would be excluded. What is the result? A set of drawings were selected; tenders advertised for; eight received, and opened,—the lowest, 2 199*l.*; the next, 2,495*l.*; highest, 2,720*l.* Is the lowest tender accepted? No! and has he no friends at Luton? And what about the other tenders? Are their estimates too high? or do the worthy members of the Local Board wish to show their impartiality by giving to the contracting competitors the same honour they bestowed on the architectural ones,—namely, a second competition? Let their reasons be what they may, they are now advertising for fresh tenders based in every way upon the same drawings, but with the additional bait that the quantities are furnished by their own architects. Now, I must say, as a practical man, and having, with others, gone carefully into the matter, that the building would be cheap at 2,500*l.*, although this sum would not include extras, which are inevitable to carry out the works according to the design.

Now, Sir, I think you will agree with me that two great acts of injustice have been committed on architects and builders,—the first in resorting to a second competition, and in selecting a design that will cost more than the amount stipulated in the conditions; and, secondly, in rejecting the whole of the tenders, and re-advertising for fresh estimates to be furnished from the same drawings on which the rejected tenders were based. W. P.

* The prosecution was undertaken at the instance of the Kilkenny and South-East of Ireland Archæological Society.

## PRESERVATION OF STONE.

Sir,—I have no wish to carry on a public discussion with Mr. Jesse Rust, but it seems necessary for me to reply to the challenge which that gentleman offered (in his letter to you last week), when questioning the novelty, and hinting at the origin, of a chemical method of preserving stone which formed part of my communication read at the recent meeting of the British Association.

Until now I was not aware that Mr. Rust had employed baryta in the composition applied by him to the decayed stone of the Houses of Parliament; but since he makes a statement to this effect, and refers to the published report of our examination before the Royal Commissioners, I assume that he carried out the process described by him on the 22nd June, 1861, and used this substance in conjunction with fluosilicic acid. Mr. Rust is evidently under the impression that he alone of all the six competitors was using baryta. I can assure him, however, that it was used in different forms of combination by half our number. Speaking for myself alone, I employed baryta in slight excess to separate the small quantity of sulphuric acid invariably present in the samples of superphosphate I had in use between the dates of April, 1861, and May, 1864. This fact was stated in the official specification handed in by me at the time of completing my work at the Westminster Palace (2nd May, 1864).

With respect to the *acid* selected for hardening the stone, Mr. Rust is but one of a large number of advocates who rely upon the indurating properties of fluosilicic acid, and he was not even the first to inform the Commissioners on this point. On the 8th June, 1861, Mr. Crookes, Dr. Bernays, and Mr. Field severally gave evidence on the use of fluosilicic acid, both alone and in conjunction with various bases; and other parties, representing "The Fluosilicic Company," have even been admitted to take part with us in the competition.

These facts will, I trust, be deemed a sufficient answer to the accusation brought against me. In the meanwhile, I beg to assure Mr. Rust that I have as yet no permission to make trial, upon the Houses of Parliament, of the improved method of proceeding which seems to have caused him so much alarm. John Spiller.

## CONCRETE HOUSES AND THE BUILDING ACT.

Sir,—I have read the paragraph on concrete for cottage walls in your last number, but having been from town for the last few weeks, I have not seen the previous remarks on the subject. The question seems one to be solved by quiet argument rather than by passion. Reference is made to ancient practice. The Romans in their walls never used concrete without courses of brick bond, at heights of 3 ft. or 4 ft., and strengthened the quoins also with brick or stone construction. The Mediæval builders also used tiers of bond in their walls of less thickness. But it is to be observed that the concrete of the Romans and Mediævalists was used in walls of from 5 ft. to 10 ft. thickness, and even then with some precautions to strengthen the mass.

The unbecoming use of terms such as "*strictly technical meaning*," and "rule-of-thumb notions," are unworthy of a calm reasoner. It is invidious to endeavour to force an officer to be responsible for experiments in construction: the Board of Works is the only proper authority to grant the permission, leaving the responsibility to the experimenter. A District Surveyor.

## INFANT MORTALITY.

In the "Health" Section, at Belfast, Professor Redfern read a paper from Mrs. Baines, "On defective alimentation as a cause of infant mortality." The paper stated that the writer intended to confine her remarks to one view of the question only—that which related to defective alimentation as a source of the excessive disease and mortality prevalent amongst infants. It was a sad, and yet an encouraging reflection, that while the cause just referred to was the most prolific in bringing about such a high rate of infant deaths, at the same time it was perhaps in a greater degree preventible than many other causes of disease and death that consign thousands of children annually to the grave. Poverty of condition was not so great an enemy to the health and life of the infant poor as the ignorance of those upon whom these little ones are depending for succour and care. The more simple the food the better if it contain a proper amount of nutriment; but the children of the labouring classes, as a rule, partake of the same kind of food as their parents. Thus milk, which ought to be a plentiful article at the poor man's table, was really a scarce one, and what little milk is purchased daily is consumed in rendering

opaque the tea or coffee of the adult members of the family, instead of being employed for the purpose of enriching the infant's food, which, by some strange inconsistency of arrangement, was either composed of "bread-pap" or of the most heterogeneous and otherwise unsuitable ingredients. Thus convulsions and other disorders followed, which too often terminated fatally, and when death takes place it is ascribed to "teething," or to what is much the same thing, "natural causes." The fact that the want of maternal milk forms a prominent cause of infant death is a reproach to the mothers of England. If this commodity, the most benign of all Nature's gifts, were scarce in the land the case would be different; but it is not so, for, with very rare exceptions, every infant is provided with its own natural nutriment during the early period of its existence, and to withhold it is to do a child most grievous, perhaps irreparable, wrong. The writer suggested some inquiry respecting a new kind of food for infants which has been introduced to the notice of the public under the sanction of Professor Liebig's name, and with respect to which great difference of opinion existed, for it had been condemned by the Academy of Medicine at Paris.

## METROPOLITAN BOARD OF WORKS.

At the usual weekly meeting, Mr. Hows introduced a deputation from the inhabitants of Packington-street, City-road, and its immediate neighbourhood, for the purpose of presenting a memorial in favour of a direct route for vehicle traffic from Essex (formerly Lower) road, and proceeding along Packington-street, Shepherdess-walk, Bath-street, Bunhill-row, and Moor-lane, into the centre of the great termini and of the Metropolitan, Great Northern, Midland, Great Western, London, Chatham, and Dover railways, Moorgate-street, Cripplegate, and the immediate widening of Shepherdess-walk, at the cost of the Metropolitan Board of Works as a part of a great metropolitan improvement.

The memorial stated that at present there were from 30,000 to 40,000 who went from the Islington district every day to the City.

The subject gave rise to a short discussion, and the memorial was referred to the Works and General Purposes Committee for consideration and report.

A report was read from the Works and General Purposes Committee recommending that the salary of the superintending architect be increased from 1,000*l.* to 1,200*l.* per annum, and that the resolution of the Board of the 4th of March, 1864, in relation to the salary of the superintendent architect, be varied accordingly. The report was adopted.

The Solicitor to the Board drew attention to certain advertisements by the Gas-light and Coke Company, to the effect that they intended to apply to Parliament in the next Session for an Act to alter or repeal and consolidate all their former Acts, and to confer further powers on the company, to define, fix, and regulate their capital, and the necessary powers to manufacture, store, and sell gas at Barking Creek. He further read an advertisement from the *Gazette* respecting the Metropolitan Gas Companies' amalgamation; and said that Messrs. Baxter, Rose, Norton, & Co., had given notice that it was intended to apply to Parliament next Session for the necessary Act or Acts to amalgamate into one, two, three, or four companies the metropolitan gas companies, and to vest in those new companies the necessary powers, as now possessed, to purchase or hire ships, coal-mines, &c., in order to procure coals at a cheaper rate for the manufacture of gas, and to repeal or alter the Metropolitan Gas Act of 1860. The subject was referred to the Works and General Purposes Committee.

## CASES UNDER METROPOLITAN BUILDINGS ACT.

*Railway Exemptions.*—Mr. Steward was summoned by the District Surveyor of Central Lambeth and part of Battersea, before Mr. Elliot, at the Lambeth Police Court, for having erected a building enclosed with wood, contrary to the 1st Schedule of the Act, on land belonging to the London and South-Western Railway Company, at Nine Elms.

Mr. Taylor, for the District Surveyor, contended that (the facts being admitted) the exemption clauses would not apply, inasmuch as the building in question was but 16 ft. from the nearest building. That the other clause was conjunctive, requiring the building both to belong to and to be used for the purposes of the railway. That even though the railway company might be the owners under the Act (Mr. Steward being only an annual tenant of the ground), the building was not used for the purposes of the railway, but for the business of Mr. Steward as a hay salesman. That the building did not belong to the railway company, as in the agreement there was a provision for terminating the tenancy by three months' notice, upon which, if the company declined to purchase the office, Mr. Steward should be required to remove it at his own cost. The company would not have agreed to purchase what was already their own.

Mr. Crombie, of the Law-clerks' Office of the London and South-Western Railway, for Mr. Steward, argued first, that Mr. Steward was not the builder, as when he stated to the district surveyor that he was building the office in question, he meant he was employing some one to build; that this was not a building, as it was not at all substantial or worthy of the name of a building; that it was constructed away from the spot and completed, leaving a space for the fire-place on one side, and then brought to the spot: it was consequently moveable, and of a temporary nature; that being 78 ft. from the ground or building of an adjacent owner, and 28 ft. from a public way, it came within the exemption; that the railway company were the owners, as when the building was once erected it became a fixture and a part of the freehold; that it was used for the purposes of the railway, being for the receipt and despatch of hay, &c., by the railway, and that they had terminated the agreement and bought the office from Mr. Steward.

Mr. Elliot determined that the building did not belong to the railway company, they having demised the land to Mr. Steward with a covenant to build; that it was not used for the purposes of the railway, being for Mr. Steward's business as a hay salesman; but Mr. Steward not being the builder, the summons as against him must be dismissed,—a summons must be taken out against the builder, upon which he would make an order. As to the company having purchased the building, he thought that would have to be settled with the Board of Works.

*A Circus.*—On Wednesday, the 9th, the District Surveyor of Camberwell, took out two summonses against a Mr. John Barrington, the proprietor and builder of a Circus erected at Peckham. The one summons was for not having given him the two days' notice required previously to commencing the works; the other for having the enclosure of wood and the roof of canvas. It was urged by the defendant that, as the erection complained of was simply a large gallery for 1,600 people, lined at the back with wood, and sheltered at the top by a covering of canvas, it was no more than a large booth; and, therefore, he considered it was exempt from the operation of the Building Act. After having heard the case, the magistrate decided that the Circus was a building, and fined the defendant 10*l.* penalty, remarking that if the defendant was dissatisfied, he could appeal to a superior court. No order was made upon the summons for irregular construction, as it was ascertained by the surveyor that the defendant had made application to the Metropolitan Board for their approval of the plan and construction of the building, and that they were about to consider it.

## CHURCH-BUILDING NEWS.

*Leicester.*—The foundation-stone of St. Luke's Church, Humberstone-road, has been laid. The ground-plan consists of a nave, with six arches on either side, forming side aisles, with apsidal chancel and aisles, the organ being placed in the north one; there being also a vestry, heating apparatus, and other conveniences. On account of the nature of the site and the number of sittings to be provided, the general form of the building is somewhat peculiar, and the tower is made to project to the west. The style is Late Pointed, and the materials to be used are brick and native stones of various colours, formed into bands, both on the exterior and interior faces. The west and principal front will comprise a central entrance, with a three-light window over, and high pointed gable. At each end of the north aisle there will be a three-light window, and at the end of the south aisle the tower is to be placed, in which are to be south and west doorways, a belfry (access to which will be obtained by circular turreted stairs in the south-west angle), a bell-chamber surmounted by four pinnacles, and a spire, which, to the top of the fane from the ground, will be about 130 ft. The south side will be simple, divided into six bays, with windows of two and three lights alternately. No windows could be obtained on the north side. The roof is to be open-timbered, and the whole interior will present a simple appearance, and provide upwards of 800 sittings. The architects are Messrs. Bellamy & Hardy, of Lincoln. The contractor is Mr. John Firn, of Leicester; and the works are being superintended by Mr. Samuel Davies.

*Slingsby.*—The chief stone of a new church has been laid on the site of the ancient church of All Saints. The new church will be in the Perpendicular style, and will be built upon the site of the old structure. Appleton stone will be used in the building of the church, and the old stone will be made available as far as possible. The dressings, mouldings, arches, &c., will be of Whitby stone. The roofs throughout will be covered with lead. The tower will be set at the west end of the church, and it will contain the three bells which were in the tower of the former edifice. On the north side of the nave will be placed the porch. The roof will be low pitched and open timbered, and the sittings in the nave are to be of oak, with carved ends, whilst the chancel will be fitted up with stalls, having finials at each end. The floor throughout the church will be paved with coloured tiles, and those used for the floor of the sanctuary will be of a superior description. The east and west windows will be Perpendicular in style, and have five lights each. The chancel, nave, and clear-story will have eight two-light windows on each side, filled with cathedral glass. On the north side of the chancel will be placed the vestry, and provision is to be made for warming the church by means of a hot-air apparatus. It is intended to have an organ in the new church. The new church will seat between 300 and 400 persons. The structure will cost in the erection about 4,500*l.*, the greater portion of the expense being borne by the Hon. Admiral Howard. The dimensions, as finally fixed, will be as follows:—Chancel 31 ft. by 18 ft., with south aisle 19 ft. by 8 ft., and north aisle, 19 ft. by 11½ ft., having eastward of it (occupying N.E. angle) a vestry, 11½ ft. by 10 ft., beneath which the heating apparatus will be arranged, and from which the hot-air flues will radiate. The nave will be 39 ft. by 19 ft., the north aisle, 39 ft. by 10½ ft., and the south aisle, 39 ft. by 7 ft. The chancel will have the five-lighted eastern window filled with Perpendicular tracery of two orders. The south window of the chancel will be appropriated to memorial glass for the late rector, the Rev. William Walker. The western window it is intended also to fill with coloured glass, in memory of the late patron, the Earl of Carlisle. The new church is the same length as the old one, but is wider towards the north.

*Parkgate* (*Rotherham*).—The chief stone of a new church, to be known as Christ's Church, has been laid. It will be in the Early English style of architecture, and will accommodate upwards of 600 persons—all free. The dimensions will be 106 ft. by 40 ft.; the height from the floor to the eaves 30 ft., and to the ridge of the roof 50 ft. The walling inside and out will be of random rubble; the roofs will be open, plastered between the rafters; and there will be a wood block flooring. There will be the usual nave and chancel, with a north aisle and north chancel aisle and vestry, and both the chancel and the aisles will be paved with Minton's tiles. The ground work will be laid for a tower, which, for want of funds, will not be erected until some future occasion, but there will be a bell-turret. The cost of the new building, exclusive of the land, which has been given by Mr. G. S. Foljambe, will be 3,000*l.*, of which 2,000*l.* have been subscribed, leaving 1,000*l.* yet to be provided. Messrs. Chadwick & Thirlwall, of Masbro', are the contractors and builders; the architect being Mr. W. White, of London; and the clerk of works Mr. M. Macklin.

*Sheffield.*—The corner-stone of the new church of St. Silas, in Hanover-square, the gift of Mr. H. Wilson, for the ecclesiastical district of Gilcar, has been laid. The plan of the church consists of a nave, 27 ft. wide and 80 ft. long, having north and south aisles, with a chancel 27 ft. wide and 33 ft. long, on the right side of which is the organ-chamber and vestry, and on the other side an aisle for the children, having a separate entrance from the Hanover-square side. Entrances are provided from Hanover-street and Hanover-square. The interior of the church will be lighted by clearstories, carried on arcades with simple circular piers, having capitals enriched with conventional foliage of varied design. The benches are open-framed ones, stained and varnished. The whole of the roofs are boarded, the nave being supported by principals carried by stone corbels. The chancel is coved and divided into panels. There is a large window at the west end. The tower is at the junction of Hanover-street and Broomhall-street, and will form a feature in the approach from Broomhall-park. It rises for some height with little ornamentation, save its projecting buttresses. Two of the belfry-windows are placed on each of its sides, and enriched by shafts, whose carved capitals are connected by a cornice of similar design round the tower. The whole is surmounted by a parapet, with foliated cornices, terminating in eight pinnacles, the total height being about 96 ft. The style is of the Early Geometric period. The heating will be by means of Mr. Jobson Smith's Gill-stove. The contractors for the work are Messrs. Badger & Holmes. Messrs. Blackmoor & Mitchell-Withers, of Sheffield and Rotherham, are the architects, and Mr. Mellers the clerk of the works.

*Bristol.*—The district church of St. Silas, newly erected in St. Philip's-marsh, has been consecrated by the Bishop of Gloucester and Bristol. The site was purchased, facing the Float and nearly opposite Avon-street, for 850*l.* The church is 120 ft. long and 40 ft. wide, and is built of Pennant stone, with freestone dressings. The style is Early Gothic, the church consisting of a nave and circular chancel, which forms an apse. The roof is open timbered, of stained red deal, the trusses of the roof resting on carved corbels. The frames of the windows

are of freestone, and the rough stone is relieved with four freestone bands, which run round the entire building. There is a porch on the north side, and also a vestry, while over the western entrance is a large gallery for the children. Over the vestry is also a small gallery for the choir and organ. The church contains 780 sittings, 551 free. The total cost, including the land, has been between 5,000*l.* and 6,000*l.* The church was erected from the designs of Messrs. Pope & Bindon, and the work was carried out by the following Bristol tradesmen:—Mr. J. Thorne, mason; Mr. G. Humphries, carpenter; Mr. Bevan, plasterer; Mr. Williams and Mr. Leaman, smiths; Mr. W. Tuckey, plumber; Messrs. Hale & Sons, gas-fitters; Messrs. Gay, glaziers.

*Wallington.*—Holy Trinity Church has been consecrated. The church is situated not far from the Carshalton Railway Station, from whence it is conspicuous by its white stone spire and square flint tower. This church is the gift of Mr. Nathaniel Bridges, the lord of the manor of Wallington. He commenced the work alone, and had intended to complete it without aid from any source; but, whilst the building was in course of erection, he received the unsolicited aid of Mr. Joseph Lawrence and another friend interested in the parish, which enabled him so much the sooner to bring the work to maturity. The edifice comprises a nave and two side aisles, a tower (open to the flooring of the belfry), the chancel, and robing-room. The walls are of flint, and the windows and doors are dressed with stone. The spire is also of stone. The roof is open, with plaster between the timbers. The seats are low open benches of varnished wood, the pulpit and reading-desk corresponding. The paving is of black and red diamond-shaped tiles. There is no stained glass in the windows at present. The aisles are separated from the nave by stone arches, supported on columns with carved capitals. The tower contains a bell, which has been presented by Sir Brook Bridges, bart., and is intended to be only the first of a fine peal.

*Llanbrynmair.*—The chief-stone of a new church has been laid here by Lady Williams Wynn. The site of the church, which was presented by Sir Watkin Wynn, in addition to a donation, is about half an acre in extent, and is situated eastward of the village on a gentle eminence. The walls at present erected define the extent of the edifice to be 80 ft. 6 in. by 27 ft., and comprise a nave, chancel with apsidal end, and vestry on north front. The principal entrance is at the west end, which portion of the edifice has been treated as the principal feature of the erection, and will be approached by a flight of steps on to a terrace from the road. It consists of buttresses, which flank the springers of the entrance archway, the inner ring of which is constructed of moulded Cefn stone, the outer arch being formed of Talerddig stone, the intermediate voussoirs being of slate from the Machynlleth quarries, which will form a contrast with the general walling. The bell turret rises to a height of 50 ft., on the western front. Accommodation is provided for 230 persons. The interior will consist of open seats, the whole of which are to be free and unappropriated. The nave roof is formed of open timber work, and plastered between the rafters, the aisles being paved with encaustic tiles, and the edifice is intended to be heated by hot air. The roof will be covered with slate from the Aberllefenny Quarries, Machynlleth, surmounted with Peake's terro-metallic crest. The cost of the church will be about 900*l.*, Mr. John Harrison, of Montgomery, being the contractor; and Mr. David Walker, of Liverpool, is the architect, from whose designs, and under whose superintendence the works are being carried out.

*Sparkbrook.*—Christ Church, Sparkbrook, has been consecrated by the Bishop of Worcester, in whose diocese the edifice is situated. The church has been erected from the designs of Messrs. Medland, Maberly, & Medland, of London and Gloucester. It consists of nave, with north and south aisles; tower placed at the south-west angle; chancel, with vestry and organ-chamber; and a porch to the north aisle. The style is Decorated, and the material Hampstead stone with Bath stone dressings. The roof timbers are wrought and stained, and the sittings are of deal stained and polished; those in the chancel of oak, and the chancel is paved with encaustic tiles. The building has been fitted with warming apparatus by Messrs. Haden & Son, of Trowbridge. The dimensions of the church are as follows:—Nave, with north and south aisles, 103 ft. by 58 ft., divided into seven bays; chancel, 28 ft. by 20 ft.; organ-chamber, 12 ft. by 10 ft.; height of nave to apex of roof, 50 ft.; and height of tower and spire to top of vane, 150 ft. The edifice will accommodate 890 persons, and a third of the sittings will be free. The works have been carried out at a cost of 8,000*l.*, under the superintendence of the architects, by Messrs. Briggs & Son, of Birmingham. The carving was done by Messrs. Purdy & Allen. The tower has been constructed specially for a peal of six bells, which, with the organ, for which a chamber is provided, have yet to be supplied. Land has been purchased for schools.

*Stratford.*—The first stone of the new church, to be dedicated to St. Andrew, at Barking-road, Plaistow, has been laid by the Bishop of Rochester. The locality, a few years ago a rural village, has now a large commercial and manufacturing population. The works connected with the church, parsonage, and schools, which it is proposed to erect, have commenced, and more than 3,000*l.* have been promised or paid in aid of the object; but a sum of not less than 7,000*l.* is still required finally to complete the undertaking.

*Newbury.*—The parish church has been re-opened. The edifice consists of a chancel and nave, with aisles to both, and a tower at the west end. The chancel was restored about two years ago. The present restoration embraces the heightening and completion of the tower with its pinnacles, the clearing away of the cumbrous galleries and high pews, and the substitution for these of new oak and open sittings. The nave-roof has been entirely restored and decorated, and the aisle-roofs are new, but copied from the old ones, which had gone to decay. The whole of the stone-work, both externally and internally, has been cleaned and restored, a new chancel-arch built, and the north and south chancel-aisles, hitherto walled off from the nave-aisles, have been opened out with new arches. A new vestry has also been constructed at the east end of the north chancel-aisle. On removing the old pavement, &c., it was found that the true bases of the piers were far under the then level of the floors, and it was decided to excavate and lower the floor to the former level, and thus restore the original proportions of the church. When the old plaster, also, was stripped from the walls, they proved to be built of a rough ashlar of freestone; this has been gone over with the tool, and repaired where necessary, and now remains in sight, instead of being again covered with plaster. The nave-roof has been entirely restored. The three stained-glass windows at the west end of the church constitute a chief feature in the work. The great west window under the tower consists of ten lights and tracery. The subject chosen is that of the Last Day. The whole of this window is designed, drawn, and painted in the style of the fifteenth century, to harmonise with the stone-work of the window. The glass itself is of the uneven varied character of the old glass used by the Mediæval artists. The west window of the north aisle is a somewhat peculiar specimen of the same style of architecture as the west window, viz., the Perpendicular or fifteenth century. The subjects chosen for illustration have been the six corporal works of mercy. The window has been executed in the same manner as the west window of the nave. The west window of the south aisle is very similar in style to that of the north. The subjects are five scenes from our Lord's life on earth, intimately connected with the priesthood. All these windows have been executed by Messrs. John Hardman & Co., of Birmingham and London. The whole of the windows in the church have been entirely reglazed, those on the south side having shaded glass, and all showing green borders. Messrs. Wheeler, of Reading, were the general contractors, putting into the hands of the following tradesmen of the town the several branches of work,—namely, woodwork, Messrs. Adey & Son; ironwork and heating apparatus, Messrs. Plenty & Son; plumber's and decorator's work, Messrs. Boyer; gasfitting, Mr. Long; carving, Mr. Turrill. The ornamental ironwork was done by Mr. Filmer, of Guildford. The restoration was carried out under the superintendence of Mr. Walker, as clerk of the works, by Mr. H. Woodyer, of Guildford, architect. Messrs. Wheeler have been represented throughout the undertaking by Mr. J. Gibbs, their foreman. No accident has befallen any of the stone-masons or other artisans employed in restoring the building. Messrs. Bevington & Sons, organ-builders, have removed the old organ, retaining the valuable part of the old pipes, and erected in its stead a new organ, with modern improvements and extended compass.

*Llanfair Caerlinion, Welshpool.*—The chief corner-stone of a new church has been laid here. It will consist of nave and chancel, north aisle, vestry, and south porch, and afford accommodation for 430 persons. The old roof will be re-fixed over the nave and chancel. Local blue stone is being used for the walling, and Shelcoke for the dressings. To cover the expenses connected with the church upwards of 2,000*l.* will be required. It is proposed, when sufficient funds are forthcoming, to carry up the west tower, of which little more than the base now exists, and add a stone tower. The extra cost of the tower and spire is estimated at 1,000*l.* The style of the church will be Early Decorated. The architect is Mr. E. Haycock, jun., of Shrewsbury; and the contractor, Mr. Lloyd, of Welshpool.

## DISSENTING CHURCH-BUILDING NEWS.

*Sittingbourne.*—The foundation-stone of a new Wesleyan chapel, at Key-street, near Sittingbourne, has been laid. The building is to seat 150 persons. There is to be a school-room beneath, 40 ft. long and 22 ft. wide in the clear, and the body of the chapel will be of the same dimensions. Mr. W. J. Beaumont, of Milton, is the builder, and Mr. Stephens, of Maidstone, the architect.

*Whitby.*—The foundation-stone of a new Congregational church has been laid by Mr. S. Morley, of London, the most liberal contributor to the building fund. The edifice will be built on the West Cliff. It is to be a Gothic edifice, with spire, and will cost about 4,000*l.*, of which about 2,400*l.* have been promised. The architect is Mr. Pritchett, of Darlington, and the builder, Mr. Robert Robinson, of Whitby. It will seat about 950 persons. The old chapel, in Silver-street, will be adapted for lectures and other similar purposes.

*Blyth (near Newcastle-upon-Tyne).*—The foundation-stone of a Wesleyan chapel has been laid at Blyth, by the Rev. R. Haworth, of Gateshead. The edifice will occupy a position facing the main road from Blyth to the railway-station in Waterloo, and having the river on the east side, and the lake on the north. The Classical style has been adopted, and the building will be 65 ft. long by 51 ft. wide, with a central projection of 9 ft. at either end. The south front shows a large central door on the lower part, with a window on each side to light the lobby. Above these is a strongly marked cornice across the central projection, and over this a moulded stone pedestal with four columns of the composite order engaged on the wall, carrying the moulded stone cornice, which again is surmounted by a pediment and circular window. Between the columns are three windows with circular heads. In the east front there will be six windows, the upper ones corresponding with those of the south front. The walls are to be built of red brick, the dressings being of stone, and to ensure stability the main walls are all to be carried down to the rock. Internally the ground-floor is to be divided into three groups of pews, the metal pillars carrying the galleries marking the lines of the passages between them. The side-pews will occupy the whole length of the chapel, the centre group finishing against a cross aisle, on the north side of which is placed the enclosed communion space. The gallery will contain three pews in depth at the sides, and ten pews at the south end. In the north projection over the minister's vestry the organ will be placed, and in front the seats for the orchestra. The total accommodation is for 800 adults, and there will be 250 free sittings. The whole of the internal woodwork will be varnished, and the chapel will be lighted by sun-light in the ceiling, and by brackets under the galleries. The contract for the whole of the works has been let to Mr. Wm. Middleton, of Blyth; and Mr. F. A. N. Haswell, of North Shields, is the architect, from whose design, and under whose superintendence, the works will be carried out.

*Small Heath (Birmingham).*—The chief stone of a Congregational Chapel for Small Heath has been laid by the Mayor of Birmingham (Mr. Thomas Avery). The chapel will be Gothic in style, and from the designs of Mr. W. P. Poulton, architect, Reading. Blue brick, with stone dressings, will form the material of the structure, the internal measurement of which will be 40 ft. by 70 ft.; height, 35 ft. 6 in. The roof will be

open, and the internal fittings of deal, stained and varnished. It is proposed to erect a gallery at the extreme end of the building, with access by a staircase at the side. The chapel, with gallery, will accommodate 600 persons. Mr. Jones is the builder.

*Lanchester.*—The foundation stone of a Wesleyan chapel has been laid at Lanchester. The style of architecture adopted is the Decorated. The chapel will seat 230 adults, and behind the pulpit provision is made by sliding doors to accommodate part of the congregation in the school-room if necessary. The building is detached, and will be enclosed in the front by iron palisades. The situation is about the centre of the village, and fronts the main street. The cost of the building, including site, will be about 1,000*l*. The architect is Mr. John Smith, of Medomsley; contractor for mason work, Mr. John Rutherford, Hexham; for slating, Messrs. Nicholson, Leadgate; plastering, not let; joiner, Mr. Routledge, Consett; plumbing, Mr. Smith, Consett.

## ROMAN CATHOLIC CHURCH BUILDING NEWS.

*Bath.*—The spire of the church on the South Parade has been completed. The cross, with a large part of the tower, has been added during the present year. This spire takes the lead of all the Bath spires in height. St. Michael's is 182 ft.; the Abbey follows suit with 170 ft.; while in order come St. Matthew's (Widcombe), St. James's (including lantern and dome), Bathwick St. Mary, and St. Saviour's, with 155 ft. 150 ft., 120 ft., and 120 ft. respectively. The spire of the Roman Catholic Church, however, is 222 ft., and so it has a superiority of 40 ft. over St. Michael's, standing as it does upon the same level. The cross was placed in its position by Mr. Herridge, the clerk of the works. Mr. Hansom, of Clifton, was the architect, and his design is now complete. The whole edifice has cost, we understand, 15,000*l*. The spire is in accordance with the whole erection, being in the Decorated style. When the chapel was opened four years ago, 60 ft. of the tower had been erected, sufficient to clear the roof of the nave. Above this is the belfry, with turrets at the angles, which changes from its form below, that of a square, to that of an octagon. Around this is a pierced parapet, and four crocketed pinnacles terminating the angle turrets. 40 ft. above the height which it has retained for three years and a half commences the spire, which is therefrom 122 ft. high. The material is Bath stone, that having been used in the erection of the church. Messrs. Bladwell & Ambrose were the contractors.

*Haverstock-hill.* — A Dominican church has been opened at the Dominican Priory, Haverstock-hill. The church, which is an unpretending building, is only intended for temporary use during the erection of the new church which was commenced some time since, and which will, it is estimated, cost 50,000*l*. When the new church—which is to be a Gothic building capable of containing some 5,000 or 6,000 persons—is opened, the temporary one will be used as the priory library. Among the subscribers to the new church, the walls of which are just appearing above ground, was a lady, who refused to have her name mentioned, but who is a donor of 9,000*l*.

## SCHOOL-BUILDING NEWS.

*Newnham.*—The new National Schools here have been opened. The schools were designed by Messrs. Medland & Maberly, of Gloucester, and built by Mr. James Coleman, of Chaxhill.

*Thropton (Newcastle-upon-Tyne).* — The old school having fallen into a dilapidated state, it was resolved to build a new one. The plans and specifications were furnished by Mr. T. Arkle, Shaftoe. The present building is erected at the east end of the village. The school, with a house adjacent for the master and mistress, is of rock stone. It is 38 ft. long and 18 ft. broad, and is capable of holding upwards of eighty scholars.

*Fownhope.* — The chief stone of a National School has been laid here. The school buildings to be erected, to which will be added a house for the master, will be built with stone of the district, random ranged, with freestone dressings, and the roofs will be covered with green Pembroke slates. The architecture employed will be Gothic, somewhat eclectic in treatment. The plan comprises a school-room, 52 ft. long by 18 ft. wide, with separate entrance for the boys and girls; a class-room, 16 ft. by 14 ft.; a sitting-room, kitchen, scullery, pantry, three bed-rooms, and requisite conveniences. The site, which is dry and elevated, with a southerly aspect, will be enclosed with a wall and gates next the road, and with fences on the other sides. The design has been prepared by Mr. T. Nicholson, the diocesan architect; and the buildings will be erected by Mr. Ford, of Fownhope, under the architect's superintendence.

*Newcastle-upon-Tyne.*—The foundation stone of the Brumel wing of the Ragged and Industrial Schools has been laid. The extension will consist of a large boys' school-room, with class-room, store-room, and work-rooms on the ground floor, and a large boys' dormitory and reading-room above. In addition to the extensions, very considerable alterations are being made, and proposed to be made. The dining-room has been enlarged by the removal of the printing-office to another part of the building; and the school-rooms for boys and girls will be thrown into one, to be used in future for a girls' school only. New class-rooms for the girls and lavatories are also provided. Alterations are projected in the administrative department, and in the sick ward. The new wing will correspond in its style of building with the existing premises. Care has been taken to make it dry, warm, cleanly, and well ventilated. A layer of slates set in cement is carried all round the foundation, to prevent the damp from rising; and the walls of the school-room, class-room, dormitory, and reading-room, are built in the inside of buff-coloured glazed bricks, to a height of 5 ft. from the floor, and above this height they will be faced with Parian cement, so that no paint, whitewash, or other absorbent material will appear to view, and the whole of the walls can be washed down more frequently. The ventilation will be self-acting, with additional resources when required: it is designed on the "through and through" principle, with openings opposite, and the windows are also arranged on the same plan. There will be a large cubic quantity of air to each person, and abundance of light. The warming is entirely by open fireplaces, which also assist in ventilating the rooms. New latrines are provided for the boys, and will be thoroughly ventilated on the same principle as the rooms and dormitories. Increased accommodation will be provided for between fifty and sixty inmates, and about 100 day scholars in addition. The drawings have been made by Mr. Thomas Oliver, under whose superintendence the works are now being carried out. Mr. Henry Andrews is the clerk of the works; and Mr. William Gibson, of the Red Barnes, is the sole contractor. The total cost, it is expected, will not exceed 2,000*l*.

# Books Received.

*The Gymnasium and its Fittings.* By E. G. Ravenstein and John Hulley. London: Trübner & Co.

This pamphlet gives a description of gymnastic apparatus, illustrated with 38 woodcuts and 143 figures on 14 plates; so that any carpenter employed may be able to construct all that is required; and, indeed some of the apparatus might readily be put together by any one with a mechanical turn without even the help of a carpenter. The intention is to guide clubs and others in the construction of gymnasia, both open-air and covered. Mr. Ravenstein is president of the German Gymnastic Society of London, of which we have before spoken, and Mr. Hulley is a Liverpool gymnasiarch.

# Miscellanea.

"Rambles on Railways."—Under this title Sir Cusack Roney is about to publish the results of a long experience in that line, including some curious facts in connexion with mountain-railways, especially that of Mount Cenis. The work also includes details relative to railways in various quarters of the globe, and to tunnels, curves, and roadways, constructed in the most ancient as well as in modern times; together with observations on the respective arrangements made between the railways and the Post-office.

The Louvre and M. Fould. — The Paris correspondent of the *Morning Post*, speaking of M. Fould, says,—"It was under his direction and inspection that the new Louvre was built, that magnificent architectural triumph which faces the old Tuileries. When the gorgeous building was completed, the Minister of State ordered a banquet in honour of the completion of a great national work. Who was invited? The workmen who had taken part in the construction of the elaborately decorated blocks and pavilions. I remember M. Fould saying,—'You must come and dine at my table, and you will be surrounded by dozens of masons, and shake the hard horny hands that built the building.' I mention this little fact as an illustration of M. Fould's thorough appreciation of the democracy of Imperialism."

Museum of the Archives of France.—This new museum, the opening of which was announced a few weeks since, presents a very interesting collection of documents and objects illustrative of the history of France. The museum occupies six rooms in the Hôtel des Archives, formerly the residence of the Prince de Soubise, in the Rue de Paradis, not far from the Place de la Bastille. The courtyard, the grand staircase, and other parts of the hotel are remarkable in an architectural point of view. The museum is on the first floor, and the first *salle*, which is the largest of the six, contains a large number of rare charters, diplomas, and other documents of the Merovingian and Carlovingian periods, written on papyrus or parchment; charters of the fourteenth century; and registers, cartularies, and illuminated manuscripts of the thirteenth, fourteenth, and fifteenth centuries.

Co-operative Clubs and Cheap Food.—A co-operative club, without the paraphernalia of stores or offices, is being established in the north of London by a Mr. Heine, the object of which is to contract with tradespeople for the trade of the association at certain reduced prices for ready money. In this way, butchers, bakers, grocers, bootmakers, &c., are glad to provide the members with goods at much reduced prices for ready money. For example, suppose the 4 lb. loaf to be at 9½d., as it now is, or even dearer, a club member will be charged 8d., and the baker will pay ½d. out of this to the club for its patronage. This farthing goes to pay expenses, and any surplus will be devoted otherwise to the benefit of the members. The entrance fee is 2*s*. 6*d*., which is the only other outlay. A clerk or workman may thus save a good few pounds in the year off his small income. It is to be hoped the plan will be extended. We some time since noticed the establishment of a club of this kind in which Mr. William Howitt, the author, took an interest, but we do not know whether this be the same or a new one.

Opening of another Tumulus on the Yorkshire Wolds.—The Rev. Canon Greenwell, of Durham, and other pre-historic inquirers, have made an examination on the Mid-Wold range of East Yorkshire. The tumulus contained about twenty-four burials, but had been previously disturbed. The mound was 56 ft. diameter, and 6 ft. high. The burials presented an extraordinary line of bodies, buried in a great measure on a stone pavement, and, although laid in all possible positions, yet forming a line of interments running S.E. by N.W., nearly cropping out on the N.W. end. Pottery, implements, and flints were found. Among them were a stone pounder, hammer, or rubber, extensively "used" at one end; a square (cube) flint, all rubbed on the edges; a long piercing implement of flint, twelve "thumb" flints, two flint arrow-heads of the leaf shape; enormous quantities of potsherds of a peculiar plain black ware; part of a cinerary urn and portions of a drinking-cup; two handles of small urns; a great number of flint flakes and chippings, and several rounded stones, rubbed flat on one surface; one extraordinary stone utensil or implement, most like a cobbler's lapstone, rubbed very smooth, and over 1 ft. long, and a great quantity of animals' bones, broken for the extraction of marrow, and among them the teeth of the ox and the red deer in great numbers. A sickle-shaped bone implement, made from a very long tusk of the boar, was also found. The skulls were dolichocephalic, or long-headed, and of a smallish people, supposed to be of the earliest date. Ten feet S.E. of the centre was a hole in the chalk, 2½ ft. diameter and 2 ft. deep, but this contained nothing but soil.

Decaying Marble.—Many buildings were constructed in Chicago a few years since of "Athens" marble, which is already crumbling, and has to be painted.

Cottage Plans.—The premium, a silver cup, offered at the Working Men's Flower Show held at Darlington on the 25th ult., "For the best plan of a single cottage, the cost of which would not exceed 100*l*.," has been awarded to Messrs. Dean & Yeoman, of York. Seven designs were sent in.

Cost of Herbert Memorials.—The total cost of the public memorial raised to Lord Herbert has been rather over 8,000*l*.—namely, 5,838*l*. 17*s*. 1*d*., for the Convalescent Seaside Home, just opened at Bournemouth; 2,021*l*. 18*s*. 10*d*. for the statue of "Sidney Herbert," by Baron Marochetti, erected in the market-place at Salisbury; and the remainder for printing and incidental expenses.

Decoration of the Leeds Exhibition Building. — The Executive Committee have placed the entire designs for decoration of the building in the hands of Professor Lewis, of University College, London, who is now engaged in carrying out the scheme originally proposed by Mr. J. B. Waring, chief commissioner. Promises of contributions continue to come in, and there seems every reason to expect that the Leeds Exhibition will be a great event.

Southwark new Park.—The People's Park for Southwark, situated partly in the parish of Bermondsey and the remaining portion in that of Rotherhithe, is rapidly approaching completion. The principal entrances are three in number, viz., one on the north side, one on the west side, and one on the south. There are also three minor entrances. The lodges at the principal entrances are designed in a decorative style. A large number of gardeners and labourers are employed in laying out the flower-beds and walks, and in transplanting young trees, evergreens, and flowering shrubs. Three drinking-fountains are to be erected within the enclosure, and an ornamental fountain in the centre of the grass-plot, and which will be placed amidst a grove of trees and shrubs. The walks are gravelled and completed, and it is expected that the park will be opened to the public on or about Christmas.

The Fall of a Chimney in Newcastle.—At the adjourned inquest, Mr. Bryson, town surveyor, was examined. He said the bricks and other materials had been removed from the foundation, and he had found that the foundation had not given way in the slightest. The ground upon which the concrete was laid had not subsided, nor had the concrete itself. He thought, therefore, that the fall had been caused by the equinoctial gale which blew at the time. He thought the chimney was not sufficiently strong, being weakened by the construction of the boiler-flue leading into it. Mr. Maling was going to re-build the chimney, and had arranged to submit the plan to witness for his approval. The jury found "that the said Robert Turner Moore was killed by reason of the bricks and other materials of the chimney falling upon him, and that the said chimney fell in consequence of the violence of the wind; and that it was not sufficiently strong in its construction, by reason of the weakness of the flue near its base leading to the boiler."

Steam Boilers.—A mode of preventing incrustation consists in forming an interior case for the boiler by means of small curved plates, arranged like tiles on a roof, and thus leaving a thin layer of water between them and the boiler. This thin layer heats rapidly, and a circulation of the fluid is produced, which prevents deposit, except in powder, on the plates. Heat is thus economised, and danger of explosion lessened. Nothing, however, can be more conducive to the prevention of steam-boiler explosions than a reliable means of ascertaining the level of the water. Many contrivances have been devised for this purpose. A simple one is coming into use in the United States. It consists in surrounding a short tube, which issues in a horizontal direction from the boiler, just beneath the proper water level, with a jacket containing water. So long as the tube is filled, as it should be, with water, and not with steam or foam, water remains between the jacket and tube; but when there is no water in the pipe, the water in the jacket evaporates, forming steam, which blows a steam whistle, and even, if desirable, opens a safety-valve.

Architectural Association.—The *Conversazione* with which the session is usually opened will take place on the 25th instant, when the president of the year will deliver an address.

Origin of Names.—Sir: After reading the article on Names in the *Builder*, I venture to send you two instances of peculiar changes of name through marriage. One is that of Hogsflesh (some corrupt it to Ho'flesh) to Bacon; a case, however, which was mentioned to me so long since that I should have difficulty in verifying it; and the second is that of Mew to Cat, mentioned to me by a Brighton solicitor while staying at the Bugle Inn, Newport, Isle of Wight, kept by Mr. Mew. I was told that Mr. Charles Cat, of Brighton, married Miss Emily Mew, to whom, I believe, Mr. Frederick Mew, architect, is related. This you will be able to verify yourself. My own name, Male, is peculiar; but I know of no corresponding name of Female. I may add that the name of one of the foremen, for many years, at Betts's Patent Brandy Establishment, was Tipple.—Dudley Male.

Proposed Working Men's International Exhibition.—A crowded public meeting has been held in the Vestry-hall, St. Pancras, for the purpose of considering the best means of promoting a Working Men's International Exhibition in London. The chair was taken by the Hon. Auberon Herbert. Mr. Ward (secretary) read the report of the committee by whom the details of the scheme have been planned. A resolution in favour of the report having been moved, Mr. Patterson, of the Working Men's Club and Institute Union, asserted that the report as read differed from that which was agreed to at the meeting of the committee. He expressed his dissatisfaction at the constitution of the Provisional Committee, and moved as an amendment that the arrangements for the Exhibition be undertaken by a honorary council; that the Hon. Auberon Herbert, Mr. Hamilton Hoare, Mr. Hodgson Pratt, and several working men whom he named, be members; that the committee be half composed of guarantors; and that the surplus money be devoted to the founding of a permanent Exhibition in which working men would receive awards for their skill, and recognition for their individual merit. After a stormy discussion the amendment was all but unanimously carried.

The Victoria Hotel, Bradford.—A new hotel has been erected adjoining the station of the Lancashire and Yorkshire Railway, at Bradford. The edifice is of stone, six stories high, and designed in the simplest style of Italian architecture. The principal front is flanked by lofty pavilions rising to a height of 105 ft., and terminated by conical roofs, decorated with wrought-iron work. The entrance portico, and also the large bay windows facing the station-yard, are flanked with polished red granite shafts and carved capitals, while other carved decorations are sparingly introduced into the design. Internally, a spacious entrance-hall and broad corridor, the latter laid with Maw's encaustic tiles, give access to the various reception-rooms, some of which are of stately proportions. The arrangement of the interior is simple. A long corridor runs from end to end of the building, on each of the six stories, access being gained to the rooms on the left and right. The coffee-room is 70 ft. by 30 ft., exclusive of a large bay window. The commercial-room is 36 ft. by 20 ft.; the billiard-room, 36 ft. by 31 ft.; and the smoke-room, 31 ft. by 24 ft. Numerous private sitting-rooms, also sets of rooms arranged *en suite*, are planned on the ground and first floors, and the hotel is capable of making up 100 beds. The principal staircase is 21 ft. by 15 ft. It is painted in imitation of marble, as also is the principal corridor. The arrangements for the service of the hotel, including the luggage hoist and dinner hoist, waiters'-room, and bar, &c., are on the newest principle, and communication through the hotel is kept up by means of electric bells. Separate staircases are provided for the servants. The corridors and staircases throughout are fireproof, and the decorations have been carried out by Mr. Briggs. The contractors for the masonry and brickwork are Messrs. J. & W. Beanland; Mr. Dixon is the plasterer; and Mr. Walsh, plumber. The cooking apparatus has been fitted up by Messrs. Jeakes & Co., of London. The estimated cost, exclusive of the furnishing, is 22,500*l*. The building has been erected from the designs and under the superintendence of Messrs. Lockwood & Mawson, architects.

Bequest of 80,000*l*. for a Church of England College in Devonshire.—The late Admiral Benedictus Marwood Kelly, who died at Saltwood House, near Bath, September 26th, and was buried at Kelly, Devon, October 8th, 1867, has bequeathed nearly the whole of his property, which will probably realise little short of 80,000*l*., to trustees in trust, to apply the dividends to the education and maintenance of boys, sons of members of the Church of England. The trustees are to provide a school-house in Devonshire, at some point west of a line drawn north and south through the parish church of North Tawton, under special restrictions as to the amount to be expended on building. The institution is to be called "The Kelly College."

Enlargement of Hasland Church, Derbyshire.—About twelve months ago, this church was found to be too small for the congregation, and its enlargement was deemed necessary. A plan, drawn by Mr. Rollinson, of Chesterfield, architect, was accepted; its enlargement soon afterwards commenced, and its completion lately took place. Two stained glass windows have been placed in the church. The east window is by Messrs. Warrington, of London, the subject being Christ's charge to Peter to feed his sheep. The west window is by Messrs. Heaton, Butler, & Bayne, of London. A new aisle has been added, and the church has been benefited by sittings for about 150 persons. Messrs. Hoole & Handby, builders, did the work of enlargement. The cost amounted to over 700*l*.

A Public Park for Chester.—The Marquis of Westminster has, during the past three years, been converting a tract of land on the banks of the Dee, at Chester, into a park and pleasure-ground. It was anticipated by the public that his lordship intended the park for the use of the citizens, and their expectations have just been realized by the offer of the park as a free gift to the citizens. The council have accepted his lordship's munificent offer, and a committee has been appointed to consider the best means of maintaining the park. A residence has been provided in the grounds for the park-keeper, and the marquis, it was announced, would charge a portion of his property in Chester with the annual sum of 100*l*., to be applied by the corporation in payment of the salary of the keeper and other expenses of the park.

Zinc Paint.—An improved metallic zinc paint has been invented by Messrs. Webster, Deane, & Rumble, of Birmingham. They propose to take spelter and melt it in a suitable furnace, and raise it to about 800° Fahr.; they then cover the molten metal with a flux or borax mixed with caustic of soda or chloride of ammonia, or other suitable flux, to prevent the action of the atmosphere upon the surface of the molten zinc; they then add thereto about 7 or 8 per cent. (or more or less) of finely-divided iron wire or scrap, agitating the whole with an iron rod until the whole of the iron or scrap particles are taken up by the zinc; they then add sufficient antimony to cause the metal to run freely from the surface. When the metal thus prepared has cooled down, it is next pulverised and ground, when it may be mixed with any oleaginous matter or varnish, and the metallic zinc paint results. When the paint is intended to be used for coating ships' bottoms or for marine purposes, they add thereto 1½ per cent., or thereabout, of vermilion or sulphide of mercury.

## TENDERS

For stabling at Southside House, Holloway. Mr. J. W. Dennison, architect:—

| | |
|---|---|
| Mann | £687 0 0 |
| Crabb & Vaughan (accepted) | 659 0 0 |

For three houses and a Baptist chapel at South Kensington. Messrs. C. G. Searle & Son, architects:—

| | Houses. | Chapel. |
|---|---|---|
| Foxley | £5,800 0 0 | £7,550 0 0 |
| Patman & Fotheringham | 5,488 0 0 | 6,798 0 0 |
| Gammon & Sons | 5,481 0 0 | 6,359 0 0 |
| Sims & Marten | 5,173 0 0 | 6,602 0 0 |
| Hedges | 5,276 0 0 | 6,455 0 0 |
| Colls & Son | 5,290 0 0 | 6,427 0 0 |
| Perry & Co. | 5,270 0 0 | 6,325 0 0 |
| Dove Brothers | 5,320 0 0 | 6,273 0 0 |
| Ennor | 5,184 0 0 | 6,410 0 0 |
| Higgs | 5,193 0 0 | 6,235 0 0 |

For alteration and addition to 130, Old Kent-road, for Mr. T. Couldery:—

| | |
|---|---|
| Linsdall | £382 0 0 |
| Randall | 364 0 0 |
| Whittick (accepted) | 344 0 0 |

*Notting-hill and Bayswater Proprietary School.*—Mr. William Bird's tender for erecting the New School Hall—Mr. John Crawley, architect—has been accepted, 1,930*l*.